Main Body of Thesis

Appendix A to I

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Professional and Personal Development and Trade Union Membership of Information Technology Workers in the Republic of Ireland and the United States

June 2005

Higher Education And Training Awards Council (HETAC)

Masters Degree by Research

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Dedication

To the memory of Frank O'Malley,

Advisor and Friend

National College of Ireland

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, such as non-trade union membership. This thesis explores the professional and personal development and trade union membership of IT workers in the Republic of Ireland and the United States. The main findings of both studies indicate that poor levels of training at work occur among Silicon Valley respondents, and that Silicon Valley workers tend to have an excessively long working week, and place most emphasis on material needs and least on family and leisure. The low levels of membership of trade unions and professional societies in both locations highlights a postmodern trend towards individualism, although this trend is more pronounced in Silicon Valley.

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Acknowledgements

I wish to thank the following for the sharing of their expertise during the research and writing of this thesis:

Dr. T.J McCabe

Dr. Micheal O'hEigeartaigh

Paul Stynes

Dr. Gabriel Byrne

Professor Joyce O'Connor

I also wish to thank all those who generously gave their time and support:

Tom McFadden

Paddy Meyler

Raymond McGovern

Bob Marburg

Michael Cullen

Theresa Cullen

The staff of Mountain View Public Library, Santa Clara, California, USA

All those IT firms and individuals who took part in the surveys.

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1.0.0 Introduction

1.1.0 Research Title

Professional and personal development, and trade union membership in the information technology sector in the Republic of Ireland and the United States.

1.2.0 Context and Area of Study

The global roots of the information technology (IT) industry are located in Silicon Valley, California, in the United States since the 1950s. The IT industry has become synonymous with the emplyment of highly skilled workers who have the opportunity to enjoy a very lucrative career. However, since the industry has mainly developed in the United States certain 'Americanised' values and work practices, such as non-trade union membership and long working hours, subsequently spread to the rest of the world. The IT industry has also become well established in Dublin, Ireland since the 1990s. Ireland is now listed as one of the largest exporters of software in the world, second only to the United States.

The broad question in the thesis explores the level of professional and personal development and trade union membership of IT workers in the Republic of Ireland and the United States, and involves a comparative study of IT workers in both locations.

1.3.0 Thesis Objectives

The thesis objectives examine a variety of issues relating to professional development, personal development, quality of work life and trade union membership of IT workers. These include:

- gender division among workers
- level of education
- degree to which IT workers have a professional or personal development plan
- knowledge and skills level of IT workers
- how IT workers reskill
- level of training that IT workers receive from their employers
- level of membership of professional computer societies

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- time spent at work
- quality of work life
- level of work-life balance
- how IT workers perceive their work environment
- the extent to which IT workers' needs are met by current employment
- the length of employment favoured by IT workers
- level of trade union membership
- type and degree of worker representation
- level of staff association membership in trade union and non-trade union firms in the Republic of Ireland and in the United States.

1.4.0 Keywords

Keywords are information technology, professional development, personal development, quality of work life, life-long learning, training, reskilling, work environment, trade unions, and workers' attitudes to trade unions.

1.5.0 Interest in Research Area

My interest in the professional and personal development of IT workers is context in the fact that I spent fifteen years working in the IT sector in Dublin, Ireland and in Silicon Valley, California, USA. I have met many people who work in the IT industry and have become aware of their concerns and the areas that they feel greatly enhance their quality of work life, as well as those which seriously compromise it. For a period of six years I was a union member in Dublin. My observations during that time of the lack of external representation in the IT sector has fuelled my interest in whether unionisation might enhance the lives of IT workers in any way. Also, due to the changing nature of technology, there appears to be a great need for workers to develop personal and professional development plans, and to invest in lifelong learning.

1.6.0 Definitions

In this thesis **Information Technology (IT)** refers to companies that are involved in the research, design, manufacture or sales of computer hardware or software, including

telecommunications and microelectronics, based on definitions proposed by Turner (2000), Preston (1987), and British Government Publication (1982a, 1982b).

Professional Development is a process undertaken by an individual to reflect upon their own learning, performance, potential and achievement, and to plan for their educational and career development. This definition is a derived from Broadwell and Sizeman-House (1986) who state that professional development refers to the long-range usage of potential, and to Gaff et al (1981), who state that professional development involves change and growth, where adults need to learn new skills and strategies to cope with work and life.

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. This definition is derived from that of Broadwell and Sizeman-House (1986), who state that personal development involves goal setting, reading, attending meetings, and making personal effort, and from Handa (1984) who advocates the practice of specific disciplines to enhance one's potential and to cultivate success, good health, and happiness.

Quality of work life in this thesis is the degree to which an employee finds satisfaction and security in 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. This definition is derived from Collard and Gelatt's (2000) proposal that the elements that denote quality of life are security and contentment in the areas of finance, family, health, career advancement and success, and peer admiration.

Trade union in this thesis is defined as a collection of workers who have joined together for the purpose of negotiating with their employers as to salary, work conditions and other common industrial relations issues. This definition is derived from Boyd (1976), Clarkson (1925), and Lecker (1994). According to **Boyd (1976)** the British parliament passed the Trade Union Act of 1871 giving legal status to unions, and stating that unions could be formed between any combination of workmen or employers. According to **Clarkson (1925)** some of the first unions were 'combinations of workmen,

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artificers and others.' According to **Lecher (1994)** trade unions are representative of their workers, but they must have financial strength, willingness and scope to represent workers interests in the workplace.

Workers' attitudes comprise of three components: emotions, cognition and behaviour. This is derived from definitions of attitudes put forward by **Spooncer (1992),** and by **Baron and Byrne (1984)**. Spooncer (1992) states that attitudes are composed of feelings, beliefs and behaviour. These elements can be assessed by eliciting verbal statements from subjects as to their emotions, cognition and intended behaviour. Baron and Byrne (1984) define attitudes as a constant cluster of feelings, beliefs and behaviours that are directed towards specific people, ideas, objects or groups.

1.7.0 Research Contribution

The importance of the research being undertaken is assessed in this section. The research variables professional development, personal development, quality of work life, and trade unionism are outlined below in terms of existing research and the importance of current research.

1.7.1 Professional Development

The areas of professional development and long-term learning of IT workers is of great importance to employers, IT workers, colleges, universities, and training organisations, governments, particularly the departments of education and industry, and professional computer societies.

This thesis investigates the rate of **IT professionals knowledge/skill base** at graduation and in their current position. It also investigates new and emerging skills required in the areas of project management, hardware and software engineering, development and programming, and customer support and documentation. This information will be of particular value to colleges and universities that offer IT courses so that course may be updated to reflect actual skill requirements for IT professionals. The **level of membership of professional organisations** is also analysed and this will provide vital data to these organisations as to the relevance of their services to IT professionals. The ways in which IT professionals currently **reskill and the level of**

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training they receive from their current employers is also investigated. It is expected that the findings of this thesis will augment existing research in the areas of professional development and long-term learning of IT professionals.

1.7.2 Personal Development

The area of personal development is of importance to employers, particularly human resource managers, IT workers, and work-life balance organisations. This thesis investigates the importance that IT workers place on various **aspects of life**, including satisfying friendships, happy family life, financially comfortable, voluntary work in the community. It also investigates time spent by IT workers on various **leisuretime activities**, including hobbies, family time, and training or academic pursuits. **Needs met by current employment** are also investigated, including financial security, and sense of belonging. The thesis also investigates the importance that workers attribute to introducing **work-life balance policies** to their workplace, including the introduction of crèche facilities, telecommuting, job sharing, encouragement of further academic training, and paternity leave.

Although existing research indicates the importance of making a personal development plan, the findings of the pilot study already undertaken in the area of personal development of IT workers indicates that IT workers in both Dublin and Silicon Valley do not favour making a personal development plan. It is expected that the findings of the main study will augment existing research in the area of personal development or professional workers.

1.7.3 Quality of work life

The quality of work life of IT workers was determined by investigating findings in the areas of professional development, personal development and work environment. Quality of life work findings will be of particular interest to employers and human resource managers, IT workers, work-life organisations, and trade unions.

This thesis investigates IT professional's **attitudes to their work environment**. It also investigates **how workers describe their work environment**, in terms of being stressful, team-orientated, competitive, etc. It also investigates the **length of time**

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workers have been in current employment, were in their last employment, and their optimum length of time in any employment. The number of **hours worked per week** by IT workers is also investigated. It is expected that the findings this thesis will augment existing research in the areas of quality of work life, including IT professional's attitudes to their work environment and to the importance placed on work, leisure and family pursuits.

1.7.4 Trade Unionism

The level of trade union membership was determined by ascertaining IT worker's **union membership**, and the **advantages and disadvantages of membership.** For non-union members, the **type and degree of representation at work** is also ascertained. **The level of staff association membership** was also **ascertained. The level of Professional development and personal development** of trade union members and non-members was also ascertained. Information on trade union levels in the IT sector and how trade unions were perceived by members will be of interest to trade unions, to employers and to the government.

1.7.5 Summary of Research Contribution

It is envisaged that the findings of this thesis will add knowledge to existing research in the areas of professional development, personal development, quality of work life, lifelong learning, organisational culture, and trade unionism. It is also envisaged that findings will be of interest to colleges, universities and private training companies, IT employers, IT workers, work-life balance organisations, professional computer societies, governments, trade unions and staff associations.

1.8.0 Literature Review

The general approach of the thesis will be to generate a literature review capturing literature and findings around the following variables: Trade unions, Industrial relations in the United States (US), worker's attitudes, Alternative models of representation, collectivism, union decline, individualism in the western workplace, IT sector, quality of work life, problems at work, professional development, training, professionals in the

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workplace, personal development,life long learning, professional organisations for companies in the IT sector, profesional organisations for individuals in the IT sector, employee performance, workers attitudes to trade unions, critical theory, and post modernism.

1.9.0 Unit of Analysis

The unit of analysis to be used is IT firms, in both unionised and non-unionised firms, in Dublin, Republic of Ireland, and in Silicon Valley, California, United States.

1.10.0 Utilisation of Data and Testing of Hypotheses

Collected data was profiled and used to empirically test original research questions.

1.11.0 Conclusions

Conclusions were drawn from the thesis' findings. Implications for policy and existing theory was discussed. The project concluded with recommendations, and the limitations of the project were identified. It was demonstrated that the research had addressed the initial research questions. The entire project was conducted in a manner that maintained the highest safeguards towards validity and reliability.

1.12.0 Sequencing of Chapters

This section outlines the sequencing of chapters in the thesis. Chapter two is where the literature review is presented. Literature was selected for review based on the variables that were relevant to research areas. Research objectives were then determined, and these are presented in chapter three. The methodology used in the research is outlined in chapter four. Chapter five provides an overview of result findings. Chapter six presents a discussion of result findings that draws upon the literature review to compare and augment results. Chapter seven draws conclusions based on result findings, discusses strengths and limiations of the study, makes recommendations and identifies areas for further study. Chapter eight contains the thesis' bibliography. The appendices (A to O) contain an interview with the Deputy Director of National Informatics Directorate in Ireland, questionnaires for each of the surveys conducted, survey results, lists of

industries surveyed in Silicon Valley, California, USA, and in Dublin, Ireland, and statistical results obtained using SPSS, Version 12.0 for Windows.

1.13.0 Declaration

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

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2.0.0. Literature Review

2.1.0 Introduction

This section examines existing theory and research in the area of the trade unions and industrial relations, the IT sector, professional development, personal development, and quality of work life. Research on trade unionism and industrial relations in Europe and the US is examined, with an emphasisis on union decline. Existing research on professional development, including training and life long learning is also reviewed. Research on personal development and the importance of setting personal goals is also included. The literature on quality of work life of IT workers is reviewed, along with problems that occur in the workplace and organisational culture.

The full list of research areas covered in the review are trade unions, industrial relations in the United States (US), worker's attitudes, collectivism, union decline, IT sector, good work practices, quality of work life, problems at work, professional development, training, personal development, life long learning, professional societies for individuals in the IT sector, organisational culture, critical theory, and post modernism.

2.2.0 Trade Unions

This section gives definitions for trade unions. It also examines existing theory and research in the areas of origins of trade unions, factors affecting union organisation, trade unionism in the European Union, and trade unionism in Great Britain and Ireland.

2.2.1 Definitions

Trade unions or combinations of workmen were declared unlawful under several acts of the Irish parliament, the first act being passed in 1729 (Boyd: 1976, p. 17). However according to Clarkson (1925) "combinations of workmen, artificers and others" were declared illegal since the 16th century. In 1871, the British parliament passed the Trade Union Act (Boyd: 1976, p. 63). This charter of unionism gave legal status to unions, and stated that unions could be formed between any combination of workmen or employers.

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2.2.2 Origins of Trade Unions

Roche (1994) traces the development of unionisation in the Republic of Ireland during the twentieth century. The history of trade unionism has been marked by working-class solidarity and the struggle for social reform. In the early 1900s union membership was recruited from the ranks of maritime workers, dockers, transport workers, millers and engineering workers. Employer resistance to unions was intense and industrial conflict was rife, culminating in the Dublin Lockout of 1914. This almost destroyed the Irish Transport and General Workers' Union (ITGWU). After a period of dormancy the second cycle of Irish unionism brought with it a high degree of working-class militancy, including land seizures, factory occupations and a wave of strikes.

2.2.3 Factors Affecting Union Organisation

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 or company level, or at individual level. It is also vital to investigate 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

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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.

2.2.4 Trade Unionism in the European Union (EU)

According to Hourihan (1998), the formation of the EU was a major development on the original Treaty of Rome (1957) which was the basis for the European Economic Community (EEC). The basic philosophy of the funding members was the fostering of cooperation between European countries on social and economic issues. The Treaty of Rome included articles relating to equal pay, the establishment of a European Social Fund, and the promotion of improved working conditions and standards of living. The first social policy initiatives, between 1974 and 1987, issued directives on equality, employee participation and company organisation, health and safety, protection of employment and regulation of working time. The Single European Act (1989) and the Social Charter (1990) established legally binding practices in the area of employment, including the introduction of a maximum working week of 48 hours, the right of EU workers to live and work in any EU state, and the right of workers to freedom of association and collective bargaining (Hourihan: 1998).

Debates currently rage over the future of the EU in the area of industrial relations: Neo liberals argue that over-regulation by the EU has blunted and dulled labour market growth. Advocates, such as the European Commission, contend that the standardisation of economic policies has lead to higher productivity and wages. Employers are wary of the introduction of further homogenising of industrial relations, while many trade unions fear the loss of their power at national level. However there can be little doubt that trade unions and industrial relations have greatly benefited in many European nations from the introduction of EU social policy (Hourihan: 1998).

The EU is made up of fifteen culturally distinct nations: Belgium, Luxembourg, the Netherlands, France, Germany, Italy, Great Britain, Ireland, Denmark, Sweden, Norway, Austria, Spain, Portugal, Greece. Hence trade union organisation in these nations, the level of membership, and the degree of involvement in industrial relations is extremely diverse (Lecher: 1994). Trade unionism may be divided along political or

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ideological lines, while in other nations, such as Ireland, Great Britain and Greece, there is only one union confederation representing workers' interests. National unions may differ greatly in terms of maturity and age. For example unions in Great Britain were born in the period of early industrialisation, whereas Spanish unions emerged in the late 1970s with the country's transition to democracy (Yruela and Serrano del Rosal: 1999). Industry unions exist in some countries, most notably in Germany, in which all employees in the workplace are organised in one union. In other countries trade unionism is denoted by large general unions co-existing with craft unions as in Great Britain and Ireland. In some nations trade unions are recognised as legitimate collective bargaining agents, while in others elected employee representation in the workplace is through works' councils, some of which have the right to conclude collective agreements (in Germany, Belgium, France, Denmark, Luxembourg, the Netherlands and Greece). Some unions grant their central organisation the right to bargain at national level, while in others the emphasis is on industry-centred bargaining. In some states unions take part in tripartite agreements and participate in decision-making at various levels, such as in the Republic of Ireland, Italy, Luxembourg, and Greece (Hourihan: 1998).

There is little uniformity in areas such as trade union rights and the regulation of industrial action. In some nations this is an individual right whereas in others it is the lawful sole right of trade unions. There is a high degree of legal regulation of trade unions in Germany and Denmark, while in the Great Britain industrial relations are more regulated by custom and practice (Yruela and Serrano del Rosal: 1999). In some nations, most particularly in Germany, employers have the right to resort to lockout. Employees' rights in some nations include co-determination (Luxembourg and Germany), consultation and information.

However despite these differences there still emerges a distinctively European model of trade unionism. Unions are allowed to organise in the workplace, and in some cases at company level. Unions have the right to influence or directly shape the terms and conditions of employment at the workplace through collective bargaining. Rights at corporate level to participate in decisions over strategy are weaker and less common. The system in Germany of codetermination in the coal, iron and steel industry is extremely rare (Hourihan: 1998).

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In the EU there is a trend towards the consolidation of dual forms of employee representation by trade unions and by state bodies for the entire workforce. Unions also have the scope to influence a government's social and economic policy, particularly where a union supports the political policies of a government. Tripartite agreements are common, the exception being Great Britain since 1979. Many unions are involved in central organisations that administer welfare, social and employment systems, while others participate in national consultative institutions that offer unions the scope to represent workers interests and in some cases to veto proposals (Lecher: 1994).

2.2.5 Trade Unionism in Great Britain

Great Britain is home to the oldest trade union movement in the world (Lecher: 1994). Traditionally trade unionism was a craft-based organisation. The displacement of craft skills by the advance of machine-based production in the nineteenth century led to the emergence of an expanded number of skilled and semi-skilled workers who were excluded from craft unions and developed their own form of unionism. Today, unions exist as deviations and mixtures of three types of union: industrial, craft and general. Industrial unions organise all employees in a particular branch of industry, irrespective of their activity or skill level. These unions are quite common in Germany but barely exist in Britain. Craft unions recruit members on the basis of a completed apprenticeship in a trade or profession. As well as craft manual unions, members of professional associations, such as air pilots, radiographers and hospital consultants may be admitted to craft unions. General unions organise members of all industrial branches without any occupational demarcation. General unions with a bias towards one sector, a grouping of sectors or a set of broadly related occupations are the dominant type of union in Britain (Lecher: 1994).

Different types of unions within the one workplace can often lead to a collision of interests. Several unions may lay claim to representing a particular group of workers or workplace. The Trades Union Congress (TUC) is the main confederation of unions, accounting for 80 percent of total trade union membership. The TUC deals with all inter-union conflicts. Unlike confederations in many other EU countries, the TUC does not bargain directly with employers. The supreme policy-making body of the TUC is the

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annual congress, where delegates from affiliated unions debate, vote on various motions, set policy and elect the general council (Lecher: 1994).

The basic unit of trade union organisation in Britain is the branch, although the composition of branches varies considerably between unions. Some unions constitute branches on a trade or single employer basis, while others have a geographical structure. There are no individual statutory rights to representation at the workplace. Individual employees only have rights to representation if they are members of a trade union which has obtained official recognition from their employer. Recognition is typically for the purpose of collective bargaining. It is however possible for an employer to recognise a union for the purpose of individual representation or for discussion on pay and conditions. Compared with employee representation in many other EU countries, British lay union workplace representatives, i.e. shop stewards, lack the legal rights of German works councillors. They do however enjoy negotiating rights, unlike their German counterparts (Lecher: 1994).

The number of British unions has declined steadily. There were 1340 unions in 1865, and still 1000 in 1940. In the 1970s however many small unions either merged or disappeared. In the early 1990s there were 70 unions in the TUC. The 1980s in Britain dealt a body blow to trade unionism. The Conservative government under Thatcher developed a policy of industrial relations that was marked by a deregulation of trade unions, particularly in the areas of industrial action and union organisation. A series of legislative interventions seriously weakened union power and hence membership. The 'closed shop' principle was rendered illegal in 1990. The scope for lawful industrial action was reduced through a tougher definition of 'trade dispute'. Official strikes were to be done through secret ballot and through the post. Union executive committees and senior union officials were to be elected by secret ballot, and union dues could only be deducted from members if unions obtained written consent every three years. Since the 1990s trade unions have been deprived of participation in the making of economic and social policy, and a number of institutions with union involvement were abolished, including the Wages Councils, and the National Economic Development Council (Lecher: 1994).

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There has also been a major decline in the proportion of workers who are covered by collective bargaining: 71 percent in 1984 to 54 perceont in 1990 (WIRS). Recognition of trade unions by employers for the negotiation of pay and conditions has also undergone substantial decline, with the growing importance of single-employer bargaining. This is partly due to the number of foreign companies that located in Britain but refused to join employers' associations. The privitisation of previously state-owned firms, the tough economic climate of the 1980s where unemployment was rife, and the drop in employment in the manufacturing industry which had been a stronghold for union membership all contributed to the severe decline in membership. In 1979 members totalled over 12 million, but this had fallen to around 7.78 million by 1992 (Lecher: 1994).

2.2.6 Trade Unionism in the Republic of Ireland

The Irish trade union movement originated in the nineteenth century and developed along similar lines to the British movement. The Irish Congress of Trade Unions (ICTU) is the sole national confederation of unions in the Republic of Ireland. It also serves as a national confederation in Northern Ireland. It is composed of some fifty-five affiliated unions organised along craft, general and industry lines. The ICTU represents unions in negotiations with state institutions and employer organisations, and plays a major part in helping smaller unions in areas such as training, legal advice and representation. The Services Industrial Professional and Technical Union (SIPTU) represents the largest number of workers in the country. In the 1980s union membership decreased, from over 50 percent in the 1970s to 44 percent in the late 1980s. This decline was due to high unemployment levels and the fact that collective bargaining became decentralised. Foreign-owned companies, particularly American firms, were also active in developing new methods of human resource management, largely without union input (Lecher: 1994).

As in Britain, there is no statutory form of employee representation or collective bargaining in the Republic of Ireland. The basis of collective bargaining is voluntarism where unions and employers form collective agreements. However, when agreements are reached they are often not legally binding. The State's role is to provide facilities, such as

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the Labour Court, to support the voluntary rules developed by the parties involved (Hillery: 1998). Since 1975 industrial relations involves a partnership between state, trade union and employers union (IBEC). ICTU has thus secured above average pay deals and improvements in welfare benefits. A national wage agreement is drawn up periodically and agreed between the social partners, i.e. the government, the union and employers. Unions are also represented on the Joint Labour Committee (JLCs) which sets minimum wages in low-paying sectors, and the Joint Industrial Councils (JICs) which operate in sectors with higher levels of union organisation. Employee representatives also sit on the tripartite Labour Court and Labour Relations Commission. The Labour Court was established in 1946 as an agency for resolving industrial disputes, such as sex discrimination cases. The Labour Relations Commission serves as a first resort for conciliation (Lecher: 1994).

The branch is the basic unit of trade union organisation. It may be geographically or industry based. The branch plays a central role as a channel for communication, disseminating policy and instructions in a downward and upward direction. Branch policy is determined at the annual general meeting (AGM). Branch committee members and delegates, who represent the branch at the delegate conferences, are also elected at the AGM. Regional branches deal with the main administration issues, and coordinate services for members all over the country. The role of workplace representatives, i.e. shop stewards, is informal as they have no statutory rights and operate according to custom or to specific company agreements. The shop steward is an employee who is accepted by both union and employers to represent members at workplace level (MacPartlin: 1998).

Union members direct policy through democratic methods, such as debates and elections. The policy-making committees at all levels are elected from lay members as well as from full-time officials. Trade unions are autonomous bodies in their own right and affiliation to the ICTU is voluntary. Trade unions send delegates with voting rights to ICTU conferences. Union delegates elect the ICTU executive committee. The committee is responsible for implementing the decisions of congress and for conducting general business. Dispute committees are maintained by congress to investigate disputes between unions to enable them to reach agreement. Demarcation tribunals deal with issues

between unions in matters relating to the demarcation of work. The Appeals Board deals with problems arising in the amalgamation of unions, so that members have redress if dissatisfied by the service they receive from the merged union (MacPartlin: 1998).

2.3.0 Industrial Relations in the United States (US)

This section examines existing theory and research in industrial relations in the US, in the areas of 'the new deal', union decline, the development of human resources management, and unionism and organisational performance.

2.3.1 The New Deal

According to Kochan and McKersie (1986), the 1930s saw the beginning of industrial relations in the United States. 'The New Deal' introduced labour policies that offered greater stability to union-management relations, and granted unions a position of legitimacy. The National Labour Relations Act (1935) established collective bargaining as the preferred form of worker participation and representation in industry. This progressive legislation sought the protection of workers' rights and the balancing of power between workers and their employers. This system replaced the previous foreman-driven style of discipline that was often harsh, arbitrary and led to the seething resentment of workers. It was envisaged that the increase in union membership and representation would lead to more stable and efficient operations in the workplace, and that any increased labour costs due to collective bargaining would be recouped through higher productivity. Unions provided employers with a system of negotiating and dealing effectively with conflict, and defining work rules and work organisation. 'Job control' became a feature of the workplace where jobs were strictly delineated as per detailed descriptions of permissible duties, depending on one's grade or position. The labour movement also actively lobbied for labour and social legislation for all workers, including support for social security, minimum wages, safety and health, and national health insurance.

Union membership increased during the 1940 to 1954 period from 8.717 million to 17.022 million (34.7 percent of the workforce). With this growth in membership unions began to centralise their power in the auto, steel and coal industries.

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Management's response to union success was to negotiate agreements that limited the scope of unions, particularly preventing union influence from extending into decision-making. Personnel departments were established to oversee job analysis and evaluation, seniority provisions, contact negotiations and performance rating systems. In many cases management came to realise that strong unions could control their members and bring stability to industrial relations.

2.3.2 Union Decline

Managerial values and strategies are key factors in explaining the decline in unionisation (Kochan and McKersie: 1986). It has become socially and politically acceptable for management to embrace a 'union-free' ideology. Bendix states that management has always been opposed to unions as unnatural and un-American, believing in an owner's right to property and to the discipline of his own workers. This is despite the fact that collective bargaining is built into American public policy. It is however the key decision-makers in a company who set the tone of the employment relationship.

In the 1950s economic recession began to weaken union bargaining power and management fought to gain further control over work rules and employment terms. Unions however continued to negotiate multiyear agreements and to expand the terms of those agreements to include further fringe benefits. The 1960s was a time of great social turmoil. Workers' dissatisfaction with conditions led to a large increase in strike action and general unrest. The government's response was to become more involved in collective bargaining and in the direct regulation of employment conditions. Economic pressures in the 1970s included sharp rises in unemployment and direct competition from abroad. New industries, such as technology firms, began to emerge, employing white-collar, highly skilled and professional workers. The U.S department of labour introduced a series of regulations that companies had to comply with to avoid costly litigation. Personnel departments were given the task of dealing with these changes and in developing an alternative industrial relations model to the traditional union-management system.

In the 1980s a new form of collective bargaining and industrial relations emerged. The decline of unions and the rise of alternative approaches to human resource

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management resulted in collective bargaining losing its hold in the workplace. By 1984 the Bureau of Labour Statistics estimated that union membership had fallen to approximately 19 per cent (Adams: 1985; Flaim: 1995). This decline may be accounted for to some extent by the new technological and service industries that emerged in the 1960s and 1970s. These firms employed mainly white-collar workers who were traditionally non-union employees, and female workers who had no history of unionisation. By the 1960s, the number of professional engineers who were union members was only 3 to 4 percent of all employed engineers (Walton: 1961; Aronson: 1985). However, a dramatic decline in union membership also occurred in traditionally unionised industries, for example, mining, construction and transport.

Existing unionised firms sought to lessen the hold of unions by refusing to expand at existing sites and instead establishing new non-union sites at locations where unions did not have such a stronghold and where labour costs were lower, such as in the Southern states. High technology firms and aviation companies, such as IBM, Motorola, Delta Airlines, and Grumman Aircraft were known to be anti-union. These companies established personnel departments that matched the policies, compensation and fringe benefits of their unionised competitors. Employee participation programs were introduced to encourage employees to attend meetings and to air any grievances. The local communities where these companies located were also opposed to unionisation because they feared that the company might relocate if a union attempted to establish itself. There is also evidence that firms invested more capital in plants that were non-union (Verma: 1983). The up-to-date technology was introduced more readily into these non-union plants. Also it became apparent to employers that unionised firms paid higher entry-level wages, had higher fringe benefits, and had a smaller wage differential between the wage rate paid to the most highly skilled worker and entry-level workers. Thus, employers believed they could reduce labour by establishing non-union plants (Kochan and McKersie: 1986, pp. 103-104).

The Conference Board 1984 survey of employee relations' practices of major U.S firms clearly shows a high level of anti-unionism among management. 32.3 percent of line managers and 43.3 percent of chief executives state their policy is one of 'directing union avoidance' (Freedman: 1985). Management thus sought to assert influence over

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industrial relations decisions that once had been the domain of labour relations' executives who would have been trained to negotiate with unions. Instead behavioural scientists were employed to implement personnel policies of flexibility and innovation in work design, high employee commitment to the firm's goals, and participation by individual workers and work groups. Employees were given such incentives as flexible work hours, autonomous work teams and extra benefits for specialised knowledge to reduce their need to seek union intervention. In companies where unions tried to campaign for members the probability of a union winning an election was lowest in firms that attached a high priority to union avoidance. Today, the most growing and dynamic sectors of the economy are largely unorganised. Union membership is currently concentrated in the older industries and firms (Kochan and McKersie: 1986).

Environmental pressures in the 1980s set the scene for significant changes in collective bargaining. A serious recession brought heavy employment losses and further weakened the unions so that wages could no longer be negotiated without reference to firm or plant-specific factors. 1982 saw 1.5 million workers forced to take pay cuts or freezes (Bureau of Labour Statistics: 1980). Changes in work rules were also demanded by many firms. Pressures of intensified competition from both international and domestic non-union markets induced firms to make changes in their bargaining approach (Kochan and McKersie: 1986).

Bernstein (1977: 34) states that despite the poor working conditions that exist in the semiconductor industry in particular, very few companies have union organisations. Unions that are established generally are in larger and older companies, such as Lockheed and Westinghouse rather than newer companies. Bernstein (1977: 34) notes that company attempts to put down unions as well as their threats to move production oversees if a union takes hold may hinder union organisation.

2.3.4 Human Resource Management

Much of the decline in union membership has been attributed to human resource management strategies that had been practised for several decades by well-known firms that had never been organised (Kochan and McKersie: 1986). This model was adopted by emerging firms that sought to emulate and improve upon it. In unionised firms formal

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grievance and arbitration procedures were put in place to deal with conflict, and workers had union representation to insure their rights were not infringed. In the new human resource management system workers did not have third-party representation. Instead complaint mechanisms, such as speak-up programs, were used to deal with conflict before it escalated. Management viewed conflict as little more than interpersonal tension or misunderstanding, and formal procedures for dealing with conflicts tended to be downplayed (Kochan and McKersie: 1986).

Unlike unionisation where workers were represented collectively, the non-union model concentrated on individual employee concerns and motivation, and stressed employee differences in terms of ability and work performance. Following the theories of motivation that emerged in the 1960s, this new model assumed that workers were intrinsically driven to work hard, to be committed to the goals of the firm, and to desire self-fulfilment through the performance of their job. Greater variety, challenge, a high degree of feedback, personal growth and the opportunity to learn new skills were included in the job. Decision-making became more decentralised, worker trust and commitment became a job requirement and workers began to work in small autonomous groups (Kochan and McKersie: 1986).

An example of a firm that uses the human resource management model is IBM (Kochan and McKersie: 1986). The individual orientation of the non-union model is stressed and the underlying philosophy of personnel policies is respect for the dignity of the individual. The company developed five different communication and conflict-management programs. These include a standardised opinion survey that provides data on employees' attitudes to their jobs, supervisors, co-workers and the company, and workers are encouraged to develop their own plans for addressing problem areas. A resident manager program is established whereby a senior manager is responsible for hearing complaints and discussing employee grievances. Skip-level interviews can be requested where workers can meet with managers one level above their own to discuss problems or concerns. A speak-up program is available where employees can anonymously submit written questions or comments to senior managers. An open door policy is established whereby employees can ask managers, up to the chief executive, to review unfavourable personnel-related decisions made at lower levels. According to Kochan and McKersie

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(1986), unlike unionisation where workers are represented collectively, the non-union model focuses on individual employee concerns and motivation, and stresses employee differences in terms of ability and work performance.

2.3.5 Unionism and Organisational Performance

Kochan and McKersie (1986) state that the performance of the functions of conflict management and resolution, the design and modification of work rules and work organisation, and the motivation and supervision of individual employees and work groups affects the firm's organisational performance. It takes a considerable number of resources, including time and personnel to administer formal grievance procedures and resolve conflict. Thus poor conflict management is costly for an organisation. The volume of grievances and disciplinary actions is largely symptomatic of the level of effective communication between managers and workers, and their ability to resolve differences informally. Thus a large number of grievances or disciplinary actions signal deep-rooted problems in an organisation's conflict-management system. Firms want a low-conflict, high-trust relationship with workers. Often it is unions that are accused of creating an adversarial environment as this high-conflict low-trust pattern becomes solidified (Kochan and McKersie: 1986).

Work rules, compensation and the adaptability of work practices also influence economic performance and worker goals. These rules and work practices develop over time, insuring stability, predictability and uniformity. Yet work practices can also be hard to alter and workers may fear that change will lead to lower status or job loss. It therefore becomes a critical factor as to the need for flexibility of work practices and how easily these can be adjusted when circumstances change (Kochan and McKersie: 1986).

The importance of motivation, attitudes and individual behaviour of employees to performance has been hotly debated by organisation psychologists. Empirical research has failed to demonstrate a consistent causal relationship between individual employee job satisfaction and performance. Yet all psychological theories of individual behaviour agree that interest in and motivation to perform one's job are somehow related to job performance and satisfaction. There is little empirical support to show that improving individual attitudes and motivation actually produces lasting economic benefits to firms.

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For lasting economic benefit to occur it has been suggested that the whole culture of the organisation must undergo this radical change, where trust, commitment, job security, and an effective and just conflict resolution system all become part of the very fabric of the firm (Kochan and McKersie: 1986).

2.4.0 Workers' Attitudes

This section gives definitions for workers' attitudes to trade unions and to their workplaces. It examines existing theory and research in the areas of origins of affluent workers' attitudes and reviews a major US National study undertaken in workers' attitudes. It also examines workers' attitudes to their workplaces.

2.4.1 Definitions

According to Spooncer (1992) attitudes are composed of feelings, beliefs and behaviour. These elements can be assessed by eliciting verbal statements from subjects as to their emotions, cognition and intended behaviour. Similarly, Baron and Byrne (1984), define attitudes as a constant cluster of feelings, beliefs and behaviours that are directed towards specific people, ideas, objects or groups.

2.4.2 Affluent Workers' Attitudes

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 behaviours of high wage earners in three mass companies. The firms and the area were prosperous and the research sought to explain workers' attitudes and perceptions. The main conclusions were that "affluent workers" viewed their jobs as a means to an end. Their objective was to achieve earnings, which would support their life separate from the company. These workers were actively hostile about supervision. They preferred an unintrusive style of supervision. Trade union membership was 87 percent but few workers were active in national or branch union activities. Membership represented job insurance with the shop steward acting as the contact between worker and union. Shop stewards were expected to be active and knowledgeable where workers' interests were concerned.

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Goldthorpe et al (1968) found that there was no association between current employment and job satisfaction. The job was a means to an end. Family life was the primary focus, with few work colleagues being seen as friends outside of work. Membership of workplace social clubs was low. Findings revealed that workplace satisfaction for affluent workers depended upon continued stability and prosperity with expectations of continuing growth.

2.4.3 US National Study

A national in-depth study of American workers was conducted over several months, in 1994 and 1995, by Freeman and Rogers (1999) to ascertain their attitudes and views on workplace issues. A representative sample of over 2,400 workers in privately owned firms with greater than 25 workers was surveyed. 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 influence over decisions. The vast majority of workers believed that the key to a successful workplace organisation was management cooperation. 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 arbitration decisions.

It was found that nearly a quarter of the workers viewed their jobs as something they would probably leave rather than as part of a career. One-third of workers were confident they could quickly get another job at about the same pay without having to move locations. A substantial number of employees were found to be unhappy about their work lives and workplaces. 33 percent said they did not look forward to going to work, whereas 25 percent said they wished they didn't have to work. 63 percent generally reported feeling loyal to their company, but they perceived a lack of company loyalty towards workers. Most employees wanted more influence and decision-making power in

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their jobs, and believed that this would improve company productivity as well as their working lives.

A large number of workers (71 percent) who were union members reported their experience with the organisation as good or very good. 90 percent of workers surveyed 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 organisations. 32 percent of non-union employees said they would vote for a union, while 55 percent said they did not want a union. In workplaces where employees believed that management would oppose a union, 12 percent of non-union workers said they would vote for a union if management did not oppose union membership.

It was found that managers in unionised workplaces had ambivalent attitudes toward unions. By a two to one margin (32 percent to 16 percent), managers in unionised workplaces reported that in recent years unions had become more cooperative rather than more confrontational. 69 percent of managers reported that the company accepted the union as a partner. 27 percent of managers believed that unions helped the company's performance, while 38 percent believed that unions hurt the company's performance. Two-thirds of managers (64 percent) believed unions helped their members. Among managers in non-union workplaces, more than half (53 percent) reported that they would oppose union recruitment at their facility. 32 percent of managers reported that it would hurt their career advancement if the employees they managed successfully formed a union.

2.4.4 Workers' Attitudes To Their Workplace

U.S workers' attitudes to their workplaces have been surveyed by various researchers. According to Kochan and McKersie (1986) researchers make two assumptions about workers: firstly that workers are good judges of what is in their own interests, and secondly that management cannot be solely trusted to either understand or try to fulfil workers' needs. It seems that workers' needs are largely dictated by environment as well as their historical experience. Workers have been found to downgrade those needs which are seemingly too difficult to achieve, and to upgrade those which are within their power

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to attain (Kochan and McKersie: 1986, p. 207). Besides the need for material rewards and job security, Kanter (1978) identifies two trends in worker values. These are the expectation that work will provide self-respect, nonmaterial reward and continuous opportunities for personal growth, and the need for workers to assert demands for individual rights, justice and equality in the workplace. Both unions and the newer industrial relations model assume that workers wish to improve their standards of living, the control over their environment and their self-esteem. However, the non-union model ignores the need for independent structures and procedures to articulate and to negotiate for the means to attain workers' needs.

Multiple surveys of different grades of U.S workers conducted over the 1970s and 1980s by the Opinion Research Corporation (Schiemann: 1983) show that all workers place a high value on material needs. 'Pay and benefits' is ranked number one by managers, clerical and hourly workers, and number two by professional workers. Career advancement, challenging work and supervision were found to be of great importance as workers moved up the occupational hierarchy. 'Advancement' was ranked as number one by professional workers, and as number two by managers and clerical workers. 'Security' was found to be ranked at number two for hourly workers but was not referred to by professionals or managers. This survey shows that different grades of workers hold different priorities and may require a different industrial relations model to help them meet their expectations.

Data collected by Kochan, Katz and Mower (1984) on employee participation indicated that 80 percent of workers surveyed, both blue and white collar, wanted a say over how their work was done. Between 78 percent and 96 percent of workers agreed that they should have a say over the quality of the products or services they produced. Between 46 and 70 percent of workers expressed an interest in gaining a say over work flexibility and organisation, with the highest interest coming from professional workers. Kochan and McKersie (1986) interpret this as indicating that workers may not tolerate union representation that focuses on traditional bargaining issues and ignores workers desires for greater direct say on how their jobs are designed and performed. The survey also indicates that workers express little interest in gaining a say over broad areas of managerial decision making, such as investment and plant location. Only 32 percent of

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white-collar workers and between 41 and 52 percent of blue-collar workers express an interest in 'the way the company invests its profits or spends its money'. This does not augur well for unions who wish to further their involvement in managerial decision-making. An area however where workers wish to gain greater influence in managerial decision-making is in the use of new technology. In this area, 79 percent of white-collar workers and between 68 and 77 percent of blue-collar workers favour having an input in decision making. Kochan and McKersie (1986) interpret the use of technology as being a priority for workers as it is closely linked with economic security and career prospects.

Kochan and McKersie (1986) distinguish between two images of unions that are common to American workers. The first is that unions and their leaders are held in low esteem. In the 1977 Quality of Employment Survey most people agreed with statements that unions exert strong control over politicians and the electoral process and force their members to go along with unpopular leadership decisions. Unions are thus perceived as being large and powerful. The second image is that unions are important and effective for improving workers' status and representing their needs at the workplace. The 1977 Quality of Employment Survey showed that 80 percent of the respondents agreed that unions were effective in improving wages, protecting job security and ensuring workers' rights against unfair dismissal. These favourable views were also found in the Harris Polls carried out over the 1980s. In the AFL-CIO-sponsored Harris poll conducted in 1984, 69 percent of the public rejected the view that unions are relevant only to blue-collar workers. In the Opinion Research Corporation surveys (Schiemann: 1983) participants disagreed with the statement that unions are no longer necessary to protect the interests and well-being of the average worker.

Kochan and McKersie (1986) analysed the findings from the 1977 Quality of Employment Survey, and the 1984 Harris Poll. Their analysis indicated that workers who were dissatisfied with their pay, job security, on-the-job recognition and promotional opportunities were approximately 40 percent more likely to express a preference for joining a union than workers who did not express job dissatisfaction. However, in both the 1977 and the 1984 surveys, only 33 percent of the non-managerial workers expressed a willingness to vote to unionise if offered the chance to do so. The 1984 Harris survey

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revealed that a majority of non-union workers believed that if their jobs were unionised that working conditions, including pay, security and recognition, would remain the same.

In both the 1977 and the 1984 surveys 75 percent of union members stated that they were satisfied or very satisfied with their unions. In another survey conducted by the National Longitudinal Survey of adult males in 1982, 87 percent of union members stated that if asked they would vote to continue with union representation. Data on union participation collected by Kochan, Katz and Mower (1984) showed that members rated the performance of their union highest on traditional collective bargaining issues including protecting workers from unfair treatment (83 percent), getting food fringe benefits (76 percent), getting good wages (84 percent) and handling grievances (69 percent). Lower ratings of 'good' or 'very good' were given for union performance in the areas of making their jobs more interesting (46 percent), gaining workers a say on how to do their jobs (40 percent), and improving productivity (40 percent). On strategic issues unions did lowest in workers' ratings. 27 percent rated the union as "good" or "very good" on gaining a say in how the business was run, and 40 percent rated unions as "very good" in representing workers interests in management decisions.

2.5.0 Collectivism

Marx (1848) writes of workers' alienation in a capitalist society, and the need for workers to form a collective. The worker is alienated from the object he produces, from the activity of production itself, from his own species, and from his fellow workers. Marx viewed all workers worldwide as sharing a common class. He declared that the only way to end their alienation was for all proletariats to unite and to overthrow the bourgeoisie. Workers needed to become organised, to form trade unions and political parties. According to Marx (1848) it was inevitable that a class conflict would result in enormous social change where workers would equitably share the duties as well as the profits of their labour.

According to Parkin (1982), Weber rejected Marx's concept that all workers share a common class. Weber believed that the mode of production was not the only factor in the creation of social inequality. Social differentiation, he suggested, is a more useful construct to employ. Workers can have many different occupations, from lawyer to bank

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clerk, and from farm labourer to lecturer. Workers can belong to different classes and social groups depending on the status of their occupation and the importance that society attributes to a particular area of work. Thus workers can become alienated from each other due to stratification.

Weigel (1992) claims that communists, Marx and Lenin, bound together the masses under a powerful cloak of collectivism. He argues however that workers' solidarity was used to create a totalitarian communist state where the excesses of the bourgeoisie were far surpassed by the tyranny and brutality inflicted on the ordinary citizen by the party. Weigel (1992) argues that without a political and social democracy that seeks to transform the human condition there can never be justice or equality in a home, in a workplace or in a nation.

According to Fantasia (1988), Marx's great discontent with capitalist factory owners exploiting and undermining workers is still highly relevant to union opposition in the US today. He argues that the lack of collective bargaining strength among 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.

2.6.0 Union Decline

Goldfield (1989) states that, from an examination of both union membership figures and the National Labour Relations Board (NLRB), union strength has steadily declined in the United States over the last three decades. A comparison of union membership figures

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since the 1930s confirms that US trade unions are weaker compared to unions in other economically developed capitalist countries. Goldfield (1989) cites several explanations for the decline. The dramatic change in the industrial makeup of the US is one important factor. The labour force has grown most in traditionally low-unionised industries, such as IT. It is therefore more difficult for unions to recruit workers when there is no history of union membership. Also, the IT industry workforce primarily comprises of white-collar, highly educated workers. This has created a problem for unions as union members have been traditionally recruited from blue-collar occupations, and heavy industries have continued to decline. However, Goldfield (1989) argues that similar patterns of employment have occurred in other western capitalist countries and their level of union membership decline has not been as severe as that in the US.

Kochan, Katz and McKersie (1994) discuss the causes of union decline in the US. They suggest that an analysis of central values, business strategies followed by US firms, and the historical and structural constraints that firms have faced in responding to new opportunities and pressures may hold the key to the decline in union membership. Structural changes in the economy are also responsible for union decline. Large shifts have taken place from manufacturing to service industries, from blue-collar to white-collar occupations, and from North to South for company location. The deep-seated opposition to unions, which is rooted in the ideology of American management and the culture of many US firms, serves as the relevant value in explaining the rise of non-union firms in American industry. The tradition of forbidding white-collar office and laboratory workers from joining unions where blue-collar workers are union members, has continued with an embargo on white-collar workers in the service industries from becoming unionised. It is also a common trend that unionised firms in the US that wish to expand may often choose to relocate to establish a new non-union workplace.

2.6.1 Union Conservatism

According to Hyman (1999) trade unions are perceived as conservative institutions, concerned with defending the relative advantages of a minority of the working population. Huge changes have occurred in the workplace since the 1960s. The old employment model of full-time, long-term stability has been eroded. Part-time work,

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short-term and causal employment, agency work, self-employment and teleworking have become typical employment situations. Hyman (1999) states that trade unions have failed to attract two large groups of workers: those with professional or technical skills who feel confident enough of their individual capacity to survive in the labour market, and those who have no such resources but are so vulnerable that collective organisation is difficult to contemplate.

Hyman (1999) views one of the major challenges of unions as reviving and redefining their role as justice advocate for all workers. This crisis of ideology has affected unions' ability to attract members, to inspire members to engage in action, and to win support from the broader public. Hyman (1999) views the struggle for trade union organisation as a struggle for the hearts and minds of people. This is a struggle to convince through concepts as well as action that unions are imbued with a sense of value and morality.

Swenson (1989) agrees that the unions' mission is to establish a 'moral economy'. Evatt Foundation in Australia (1995) concluded that unions need to reformulate their goals to ensure that their activities are closely aligned with values such as freedom and fairness. COSATU (1997) stated that the key challenge for South African trade unionism is to offer 'moral leadership'.

Workers today are living with a huge sense of job insecurity, where their power and resources are reduced (Hyman: 1999). Unions must actively promote the democratic function of trade unions, addressing workers' real grievances and concerns, and exposing the anti-democratic character of much that passes for 'human resource management'. Hyman (1999) also advocates 'social unionism' where unions must address such issues as childcare, healthcare and the quality of community life.

2.6.2 Individualism in the Western Workplace

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 among families, neighbourhoods and workers have become eroded and fragile as people move to new areas to set up home and to obtain work. Mosca (1939) contrasts this new individualism, this "each man for himself" attitude, with eastern cultures. In India, China,

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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. According to Putnam (2000), 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 (2000) 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 Two, 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 United States about the concept of 'membership'.

Putnam (2000) quotes labour economist, Peter Pestillo, who echoes this new individualism which threatens to engulf American society: "The young worker thinks primarily of himself. We are now experiencing the cult of the individual, and labour is taking a beating preaching the comfort of coalition".

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

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applauds competitiveness, independence and success, while ignoring the need for cooperation and solidarity. Bellah et al (1991) state 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 twenty 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, anxious-class 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 (Bellah et al: 1991).

2.7.0 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 centre, non-union policy, work ethic, and working conditions in the IT industry.

2.7.1 IT Definitions

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 emerged in Britain in the early 1980s during public debates about changes in the nature of industry and employment. Some sources suggest that the term had been used since the 1960s within a

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small specialised sector. A British government publication (United Kingdom: 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.

2.7.2 US Domination

According to Turner (2000) the US dominates the IT sector globally. In 1998, the IT sector represented 8.2 percent 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, with sixteen US companies being listed among the top twenty positions. Thus the US is undoubtedly the world leader in the IT sector.

2.7.3 Silicon Valley

Thomas (1985) states that Silicon Valley occupies the area that is officially called Santa Clara Valley, in California. This area stretches from the Santa Cruz mountains and the San Francisco Bay, from Palo Alto, through Mountain View, Sunnyvale and Santa Clara, down to San Jose, and continues as far south as Gilroy. According to Thomas (1985), the community of Silicon Valley is the first in the world in which virtually the whole society, the economy, the idle chatter, the lifestyle, and their whole world outlook, revolves around the electronics and technology industry. Silicon Valley is populated by programmers, writers, engineers, researchers, lawyers, service workers and other computer professionals. According to Thomas (1985), each person's job, including the baker who makes silicon chip cookies boxed like floppy discs, is geared to serving the 'high tech' industry.

According to Bernstein (1977), Santa Clara County developed from a peaceful valley of orchards into a suburban metropolis of sprawling towns and high technology industry. 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. Stanford University was established

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in 1884, and subsequently developed into one of the leading educational institutions in the US, specialising in engineering and technological research. Bernstein (1977) catalogues the rise of the IT industry, beginning with the formation of Hewlett Packard (HP) in 1938 from a small garage in Palo Alto, the development and funding of aircraft and electronics in the Bay area by the government during and after the Second World War, the establishment of the Stanford Research Institute in Menlo Park, San Mateo, which drew the biggest and brightest scholars in the country, and the trickle of aerospace, weapons and missiles, electronics, semiconductor and telecommunications industries that began to be established in the Valley in the 1950s. This lead to an explosion of high tech start-up companies that began to design, manufacture and market innovative Internet and networking products.

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 prices 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. The layer of smog that hangs over the valley is a significant health hazard, with pollutants from automobile exhausts causing respiratory and nervous systems problems (Bernstein: 1977: 49).

In 'Starting up in the US' (1999), Enterprise Ireland describes Silicon Valley as the home of high-tech computer software, hardware, electronics, biotechnology, and aerospace industries. It states that Silicon Valley is one of the most concentrated technology clusters in the world, with companies such as HP, Nortel, Intel, 3Com, Silicon Graphics, E-Trade, Cisco, Oracle, Sun Microsystems, E-Bay, Yahoo and Netscape headquartered in the region. The fundamental business principles associated with Silicon Valley are innovation, risk, entrepreneurial spirit, and openness. Silicon Valley supports and encourages start-up companies and the culture facilitates growth for those that are

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prepared to build the requisite infrastructure. San Jose, the largest city in Silicon Valley, has the highest educated workforce in the US, with 63 percent of adults having attended third-level education.

2.7.4 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 the Republic of Ireland.

Gallen (2001) of the National Informatics Directorate, states that in the late 1970s the Irish government made a decision to concentrate on attracting industry of a high value-added nature, preferably employing a high proportion of university graduates. In 1981, through the Irish Development Authority (IDA), the government launched its international services programme, indicating a shift away from the manufacturing industry. This programme was particularly successful in attracting American software companies who began to use Ireland as a base for localising their products for the European and other markets. Early companies to invest in the Republic of Ireland included Lotus, Digital Equipment (now Compaq) and Microsoft. Ireland rapidly became the automatic choice for software companies for the localisation of products, subsequently attracting Oracle, Novell, Informix and SAP among others. Foreign companies also came to develop new software, including Sun Microsystems, EDS and Motorola. Other companies who had previously had hardware manufacturing bases in the Republic of Ireland turned to software during the 1990s. These included Ericsson, Amhahl (now DMR) and Nortel Networks (previously Northern Telecom). In the late 1980s the term "industry" was applied to software in the Republic of Ireland. A campaign by the industry's trade association, now known as the Irish Software Association (ISA),

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led to government recognition of the industry in 1989 and the setting up of the National Software Directorate in 1991.

Gallen (2001) attributes the success of Irish owned software companies to a small number of common characteristics. The bulk of Irish companies build their business around a product rather than a service. Export markets are a priority. Ireland is a small market, and products are more easily exported. The market targeted is typically a niche market where the competition is not Microsoft or Oracle. This has been a crucial success factor, and Irish companies have shown a remarkable ability for picking suitable niches. There is an emphasis on quality processes and products, and a significant percentage of Irish companies have quality certification. Attention is paid to the management of the business, and this is encouraged by the industrial development agencies.

Enterprise Ireland's 'Guide to careers in computing' states that Ireland is one of the largest exporters of software in the world, second only to the US. Gallen (2001) agrees with Duffy (2000) that the success of the Irish software industry is due to several factors. These include the supply of quality graduates that provides the main raw material required by the industry; the telecommunications infrastructure that meets world standards; the fact that English is the spoken language; the quality of life in the Republic of Ireland, and the flexibility of the Irish in adapting to changes in the workplace. The low rate of corporation tax introduced by the Irish government is a major incentive for firms to relocate to Ireland. Stable government is also a factor that has contributed to foreign investment in the Irish software industry.

2.7.5 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. According to Jackson (1997), Intel, one of the most successful semi-conductor companies in the world, was outraged when it discovered that some of its workers were campaigning for representation by the United Auto Union (UAU), the largest union in the US. Management at the Livermore plant decided on a strategy to allow workers to hold a ballot for union representation, while running their own campaign to undermine support for the union. They firstly went about convincing some of the workers that Intel was a

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fair and secure employer and that a union was not necessary to improve wages or conditions. Their second strategy was to persuade workers who sought reform that Intel was genuinely interested in developing solutions to work-place problems. Their third plan was to conduct a military-style campaign that offered carrots to induce workers to side with management, while promising retribution to those who voted for union representation. The result of the union ballot was that only one in five workers voted for union representation. This ballot was the closest that Intel ever came to union involvement.

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 percent of organisations that replied to the postal survey did not recognise trade unions. Less than 50 percent of employees worked for firms where unions were recognised. Only one in ten employees were found to be union members. Larger US establishments, with over 500 employees, were more likely to be non-union than their British counterpart. McLoughlin and Gourley (1994) suggest that factors other than the practice of US human resources management (HRM) may be important in explaining the predominance of non-union companies. Relatively new smaller companies were set up during the 1980s with technical workers who had not previously joined unions, and where companies had never been targeted by unions.

Dunlop (1988) views the advent of highly sophisticated technology in the US 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 US and this has only increased in the information technology area.

2.7.6 Work Ethic

According to Rogers and Larson (1984), Silicon Valley is synonymous with working long hours because the competition between companies is so intense. It is of primary importance that a company is the first to market a new product, and rivalry between companies is enormous. Companies put their whole effort into being a real 'comer', and employees get wrapped up in this 'team spirit' to make a supreme effort to make this

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product a success. Peer-pressure is encouraged, and those whose performance is not up to scratch are quickly identified and terminated.

Many of the smartest and most highly qualified workers in the United States work in Silicon Valley. Rogers and Larson (1984) state that some technical people like to work long hours. They have a curiosity about how a device works and are genuinely interested in producing super code or building a superior networking device. But workdays are intense and there's an urgency to keep producing and progressing towards that deadline. The high-tech industry moves so fast that there is never time to relax and consolidate. When the stress is at its peak it can be difficult for workers to sleep, fearing they might not meet their deadlines.

Rogers and Larson (1984) 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, others become the real casualties of Silicon Valley. Very few workers become millionaires. According to Rogers and Larson (1984), the victims of the Silicon Valley work ethic probably outnumber the successes by a factor of ten to one. Most workers encounter the caprice of the work ethic via layoffs. Few experienced workers have not been laid off at least once due to a major down-turn in a company's performance. If a worker is laid off at a time when a recession has just hit the industry, then job prospects might not be very promising.

According to Cringely (1992), most IBM employees are hired straight out of college and have never worked for another company. Employees are expected to espouse the company line. Cringely (1992) states that the cost of working for one of the most powerful companies in the world 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 tolerant non-IBM behaviour.

2.7.7 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 in semiconductor firms. Hayes (1989) describes the cruel irony of 'clean rooms' where fume-filled chip processing

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facilities are protected, while workers are exposed to dangerous chemicals. Clean-room casualties multiply beyond the factory gates as processing chemicals seep into the Valley's air, water supply and food chain. Bernstein (1977) also states that workers in the semiconductor industry have to face dangerous health and safety conditions, as well as constant cycles of hiring and firing, and stressful and pressured jobs in unorganised work places. 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.

Hayes (1989) also writes of company's cynical hiring policies with regard to temporary immigrants. These are the most vulnerable employees in the Valley. They are kept in line by the threat of being exported back home unless they work long hours and are super-productive. Hayes (1989) also states that even salaried workers are exempted from labour codes that regulate the amount of overtime that people can be forced to work. This is particularly manipulative as workers are not paid for working overtime but have little choice but to do so as part of their regular working week.

Hayes (1989) also contends that unions have abandoned the Valley. This is despite the fact that companies in Silicon Valley are inclined to lease both workers and facilities on a temporary basis, resulting in the highest number of temporary workers, job turnover and industrial vacancy rate in the US (Mangum, Mayall and Nelson:1984). Hayes (1989) describes the high-tech industry as highly volatile and insecure: a good example of contemporary capitalism. There are many forces which impinge on the technology industry: instant success, ill-fated market debuts, compressed development schedules, sudden product obsolescence, unexpected and unrelenting competition, unforeseen 'bugs', and disloyal financial sponsors. The results of these erratic forces are passed on by companies to their workers. Employers are fickle and they fire and hire as the project, the product and the market dictates. Startup companies particularly favour temporary, easily disposable workers. Hayes (1989:50) quotes a Valley agency spokesman who estimated that a lot of high-tech companies employee between 10 and 15 percent of temporary workers.

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The utter disrespect with which workers are treated who are no longer required by the company is also commented upon by Hayes (1989). He describes the routine occurrence in Silicon Valley when workers or managers are laid off or terminated. Workers are met at their cubicles by security guards who announce that the employee is to be terminated. The removal of personal property from the employee's desks and benches is then scrutinised. The worker is then escorted from the building, and is handed their final pay-cheque at the exit. According to Hayes (1989) this shows the expendability of professional workers in Silicon Valley, and the degree of loyalty that companies show to their staff when profits sag or projects lose favour.

Hayes (1989) states that workers in Silicon Valley, no matter how badly they were treated, seem to accept their corporate lot in life. Professional associations were formed, such as the Society for Technical Communication (STC), the Association of Scientists and Professional Engineering Personnel (ASEPP), the Association of Technical Writers (ATW) and others, yet these organisations did little but espouse the ethics of corporate conformity.

2.7.8 Gender in the IT Sector

Since technology draws on science, the areas of computers and technology have been traditionally viewed as falling within the realm of 'men's work'. This traditional view of the inherent masculinity of technology, combined with the entrenched belief that a woman's place was in the home, has prevented many women from participating in technological endeavours, and has often blocked women from gaining recognition for their contributions (Zierdt-Warshaw et al: 2000). In the US, discrimination in the workplace on the basis of gender was not included in the Civil Right's Act until 1972.

Webster (1996) agrees that technological and scientific activities are overwhelmingly equated with masculinity. This has had a profound impact on women's access to skills, technology, and technical work. The culture of computing is alienating to girls and advantageous to boys from primary education onwards (Kirkup and Keller: 1992). According to Hoyles (1988), the division of gender in computer education is due to a number of factors, including the practices of teaching staff, and the conduct of computer clubs that promote and encourage male participation over female. According to

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the National Science Foundation (NSF: 1999), in the US in 1997 only 18 percent of engineering degrees and 33.6 percent of computer degrees were awarded to females.

According to Cockburn and Ormrod (1993) the sexual division of labour in technology means that few women are ever employed as scientists, engineers, or at senior executive level. According to Webster (1996) women are absent or marginalised from working in the early stages of design and creation of IT systems, but instead women are employed in the less skilled and lowest paid areas of production and clerical.

In the Republic of Ireland, research into women in the electronics and technology industry clearly shows that the majority of female workers are employed in the lower-skilled categories, in such positions as clerical and operative. Rees (cited by Ducatel: 1994) reports on his findings of the sexual division of labour in the Irish electronics industry in 1994. Women as a total of the workforce made up 3.5 percent of managers, 5.9 percent of engineers, 21.8 percent of other professional, 68.9 percent of productions workers, and 77.2 percent of clerical workers. Barry (1999) reported that female managers accounted for 9.9 percent of the total employed in the Irish electronics industry, while female engineers accounted for just 4 percent of total number of engineers. Barry and Brunt (2002) also found segmentation on the basis of gender in the Irish electronics industry. They reported that 48 percent of the 186 females surveyed in multinational electronics companies in South-west Ireland worked as operatives; 36 percent had positions in the clerical, administration, technician and other categories; just 16 percent accounted for engineers, managers and supervisors.

According to the National Science Foundation (NSF: 2000), women accounted for just 29.5 percent of scientists and engineers in the US labour force in 1998. The report stated that at all levels of education and employment, women were more likely than men to be employed in part-time positions, and to receive lower salaries than men in similar positions.

2.7.9 IT Salaries

According to a report on average salary levels of IT professionals in California (American Electronics Association: 2002), based on US government data, the annual

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average employment salary for San Jose High-Technology workers was $145,900. Salaries in Silicon Valley are most commonly based on market rates for level of position.

A survey of Science and Engineering graduates in the Republic of Ireland (Forfas and ICSTI: 2003) shows a direct link between salary level and qualifications in 2000, as per the following table.

Table 1. Science and Engineering Graduates in the Republic of Ireland – Median Starting Salaries for 2000 - by Level of Qualification

Course	Qualification	Starting Salary (Irish Punts)
Science	Higher Degree	25,500
Science	Degree	22,500
Science	Diploma	20,500
Science	Certificate	20,500
Engineering	Higher Degree	25,500
Engineering	Degree	25,500

The ForFas-ICSTI report (2003) states that industry recruitment policy in the Republic of Ireland should consider both market forces and the level of qualifications when setting salary levels. The report also compares the starting minimum, average, and maximum salaries of Science and Engineering graduates in the IT industry. These salaries (all in Irish punts) are shown below.

Table 2. Comparison of Science, Engineering and Technology Graduates' Starting Salary Range in Technical Areas of Employment in the Republic of Ireland (2001)

Occupation	Minimum Salary	Average Salary	Maximum Salary
Information Technology	18,000	21,000	25,500
Software Development	19,000	25,000	32,000
Engineering	21,000	26,000	35,000

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2.8.0 Good Work Practices

Levering (1988) researched the top twenty companies that had been identified in the "100 Best companies to work for in America" by Moskowitz and Katz (1985). Levering interviewed employees and managers at every level, from truck drivers to technicians, and from sales people to secretaries. Despite the differences in terms of industry and work carried out in these companies, Levering found that employees interviewed all spoke of the same enthusiasm, dedication and sense of belonging in their workplaces. Many attributed these feelings to the same essential dynamics in their working environment. 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. From this research Levering (1988) prepared a checklist of attributes that denote a great place to work. These include having basic terms of employment met such as fair pay and benefits, having a commitment to job security, and to a safe and attractive environment. The job should maximise individual responsibility for how the job is done. It should have flexible working hours, and the opportunity for growth in terms of providing training, offering promotion and recognising mistakes as part of learning. Workplace rules should reduce social and economic distinctions between management and other employees, and should allow workers the right to due process, to information, to free speech, to confront those in authority. Also, workers should not be forced into being part of the family or team at work. Workers should be given a stake in the success of the company by sharing rewards from productivity, sharing profits, ownership and recognition.

Lukeman (1989) advocates companies adopting 'the worth ethic' as a way of increasing performance and motivation. The worth ethic believes in the intrinsic worth of each employee. Employees are encouraged to take responsibility at work and to do their best in the performance of their tasks. This kind of company helps employees to develop their skills and talents, and offers them positive feedback as much as possible. According to Lukeman (1989) we all have a hunger for approval, and when managers give their employees' praise and positive feedback this helps their performance and motivation levels to increase. Lukeman (1989) has found the opposite effect on motivation and

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performance when employees are criticised, even when this is labeled 'constructive criticism'.

2.8.1 Spiritual Values in the Workplace

Goldman (2001) researched the spiritual journeys of workers in Silicon Valley. He found a unique local culture: future-oriented, non-traditional, money-driven values interacting with and influencing the individual's search for meaning in life. Goldman (2001) states that these cultural trends are now spreading through much of modern America. Many of these people have dropped out of the high-tech world and have taken a different path. According to one interviewee, he used to make $100,000 a year in the corporate world. Now he makes $7,000 but feels more contented working with an Islamic community as a social activist.

Mitroff and Denton (1999) conducted extensive surveys and over ninety in-depth interviews on spirituality in the US workplace with high-level managers and executives. Findings revealed that respondents had almost unanimous agreement with regard to the definition of spirituality: that spirituality is the basic desire to find ultimate meaning and purpose in one's life, and to live an integrated life. Although the majority of people in organisations have strong spiritual beliefs, few feel they can act on their beliefs in the workplace. As a result, both individuals and organisations are spiritually impoverished.

Other major findings include that workers do not want to compartmentalise or fragment their lives, and they especially want to be acknowledged as whole persons in the workplace (Mitroff and Denton: 1999). People differentiate strongly between religion and spirituality. Religion is viewed as intolerant and divisive. Spirituality is seen as universal and broadly inclusive. Those who are associated with organisations that are perceived as more spiritual also consider their company to be more profitable, and report that they are able to deploy more of their full creativity, emotions and intelligence in their work.

As a result of their research, Mitroff and Denton (1999) identified five distinct models as to how spirituality can be practiced in the workplace. The first is a religion-based organisation that brings religion into the workplace to take over an organisation for Christ, like Mormon-owned AgReserves, Inc., the largest producer of nuts in America.

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The second is an evolutionary organisation that begins its life with a strong association or identification with a particular religion, and over time, evolves to a more ecumenical position, like the YMCA, and Tom's of Maine. The third is the recovering organisation that adopts the principles of Alcoholics Anonymous as a way of running an ethical organisation. The fourth is the socially-responsible organisation that develops when the founders are guided by strong spiritual principles which they apply directly to their business for the betterment of society, like Ben & Jerry's. The fifth is the values-based organisation that derives from the personal values of its founders that they believe in intensely and wish to carry forward. The latter includes family values and general virtues, but where religious or spiritual values are downplayed or even rejected.

2.8.2 Creating a Meaningful Life

According to Cascio (2000), career professionals are beginning to recognise that what happens in one part of their lives affects other parts. These 'parts' include the vocational, the social, the intellectual, the physical, the spiritual, and the emotional. Weaving life into a meaningful whole means having awareness of female and male socialisation, life roles, renegotiation of roles, equality in relationships, acknowledging the personal issues that affect career, and seeking to connect all aspects of the self together.

2.8.3 Humanising the Workplace

Cloke and Goldsmith (1997) identified fourteen values that can be implemented to humanise and empower organisations. These are **inclusion:** helping every person to feel they belong. **Collaboration:** building partnerships where people may work together to achieve a common goal. **Teams and networks**: creating small work-teams of four or five people who can support and empower each other, and self-direct and self-manage their own project. **Vision:** asking each employee what their dreams and wishes are for themselves, the company, their families and their communities. **Celebration of diversity**: differences are not seen as threats but as sources of curiosity, interest, strength and possibility. **Process awareness**: Encouraging the building and repairing of communication, facilitation, problem-solving, negotiating and conflict resolution. **Open and honest communication:** the sharing of information throughout all levels of the

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organisation. **Risk taking**: employees must be encouraged to try more innovative ways of doing things, and to be given permission to fail and to make mistakes in order to learn and grow. **Individual and team ownership of results**: each employee must be encouraged to speak out and to take responsibility for individual performance, and every team needs to take responsibility for the work of each individual through providing encouragement, support, honest feedback and training. **Paradoxical problem solving**: Employees should be allowed to explore the ambiguities and contradictions that may exist while searching for a solution. **Everyone is a leader**: The responsibility of every employee is to take charge of their own life and to help everyone else to do the best job they are capable of doing. **Personal growth and satisfaction**: The organisation will be structured in such a way that people's work lives will be enhanced, they will have flexible schedules, cross-training to enhance skills, supportive and innovative teams and the chance to alternate the role of leader. **Seeing conflict as an opportunity**: realising that conflict is an opportunity for learning, growth, change, improvement, deeper understanding and more intimate relations with others. **Embracing change**: employees need to be made aware that constant, continual, rapid and accelerating change is a way of life in the present workplace.

According to Cloke and Goldsmith (1997) all fourteen elements need to be in place before a transformation at work will take place. Each value is interrelated and none of them stands alone. Together they will change the entire organisational system.

2.8.4 Job Satisfaction

According to Seaman (1999) there are several attributes that determine job satisfaction. These include liking the work you do, liking the person you work for, liking your co-workers, making sufficient money to have a comfortable lifestyle, seeing that your present job is leading to something better in the future, and liking the culture of the organisation.

Seaman (1999) also maintains that a worker's personal purpose must be aligned with the purpose of the organisation. When workers feel that achieving the company's goals and objectives moves them closer to their own goals then work is viewed as a meaningful and successful enterprise. If this alignment between company and personal

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goals does not occur then the worker will not work diligently, and may even do everything in his or her power to disrupt the company, such as complaining, whining and arguing with co-workers. This creates 'a misfit' in the organisation where the worker feels deep resentment and unhappiness.

According to Seaman (1999) the core values of the firm must also align with the workers' core values. A major problem here is that the company's stated values are often the values that the company ought to have, but in reality these values do not exist. Workers will become frustrated and angry when core values espoused by executives are openly violated by management. The actual core values of a company must be discovered by its workers. When there is a match between actual company and personal values then workers feel job satisfaction. Collins and Porras (1994) also state that workers can not define the core values of an organisation, but they can discover those that actually exist. All too often workers discover organisational core values that are not commendable.

Smith-Moran (1997) states that work is sustained effort that has a purpose. Smith-Moran (1997: 17) agrees with Seaman (1999) that job satisfaction occurs when a worker feels that the tasks performed have meaning and purpose. The purpose of work may include earning money, fulfilling ambitions, developing a sense of identity, building or creating an item of value or use, doing what one loves to do, or answering a call.

2.9.0 Quality of Work Life

This section examines existing theory and research in the areas of quality of work life, including work-life integration, knowledge workers and quality of family life, telecommuting, the work-life boundary in software work, quality of life measurement, concern for work-life balance, family-friendly policies, and part-time work.

2.9.1 Work-Life Integration

Marks, Scholarios et al (2001) proposed a model of work-life integration and work outcomes using the concept of psychological contract. Research was based on surveys of software professionals at two IT sites in Scotland. Psychological contract refers to the relationship between the employee and the organisation, with emphasis on what the employee believes he or she should give and receive in terms of the organisation.

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It was found that the degree of negative spillover from employees' work-to-nonwork life is influenced by the organisations's approach to handling family demands. 'Spillover' refers to employee's emotions and behaviours that carry over from one domain to another. It was also found to impact perceptions of trust and fair treatment that mediate the relationship between negative spillover and job satisfaction, and have further implications for organisational commitment and intention to remain in the organisation. Results show that despite high work-to-nonwork life spillover, mutual gains can still be attained by an accommodating organisational approach to employees' nonwork lives.

According to Hansen (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. These include finding work that needs doing in a changing global context; weaving our lives into a meaningful whole; connecting family and work; valuing pluralism and inclusivity; exploring spirituality and life purpose; and managing personal transitions and organisational change.

This approach views work in the context of individual lives and society. It acknowledges the spiritual aspect of purpose and meaning that can be attained through work. It seeks to use technology in a constructive way to preserve the environment, to create and never to destroy. It requires that co-workers be treated with dignity and respect, and that flexibility be advocated in negotiating roles and work arrangements. Diversity and multiculturalism is also encouraged. Change is approached by identifying roles, routines, and relationships, and by developing strategies for coping, such as offering support and developing an action plan (Hansen: 2000).

ILP is inclusive, holistic and integrative. It connects many parts of people's lives with society. Some innovative organisations have implemented many of these changes, such as Motorola and Microsoft. ILP fosters the growing awareness that the micro and the macro levels of work and society greatly affect each other (Hansen: 2000).

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. The quality of people's lives is determined by two components: what they do, and how they experience what they do. According to Collard and Gelatt (2000) what people do can be broken

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down into the content of daily activities, the environment, their relationships, and motivation. Quality of life is about balance, spending the right amount of time on each activity that we do. Gaining quality in life is, in essence, a matter of time management. How people experience what they do is subjective, but the process of quality of life enrichment contains several core elements. If there is intense pressure in work or life, the most important factor is whether this is experienced as panic, fear, paralysis or excitement.

According to Collard and Gelett (2000) the elements that denote quality of life are security and contentment in the areas of finance, family, health, career advancement and success, and peer admiration. Each can be a hindrance or an asset to the quality of one's life. We set our own internal goals, even if these are greatly influenced by society. A quality life may have the ingredients of having time for reflection, for a partner, for a family, for socialising, for hobbies, and for a spiritual life. Integration between work life and no-work life can help achieve a quality life in a world that is full of change and instability (Collard and Gelatt: 2000). Covey (1989) suggests that learning to simplify our lives and focusing on the really important things can lead to clarity and balance.

2.9.2 Knowledge Workers and Quality of Family Life

According to Marks, Scholarios et al (2001), technological, structural and demographic changes in employment, including increasing demand for more multiskilled and flexible 'knowledge workers' (Carnoy & Castells, 1997), are being associated with negative experiences of work such as involuntary contingent work and role overload. These experiences have been linked directly and indirectly to the quality of family life (Greenhaus & Beutell, 1985), psychological well-being, and health (Cooper & Smith, 1985; Nolan, Wichert, & Burchell, 2000). Increasingly, research has been directed at conceptualising and specifying the nature of the work-family interface and its impact on work-life balance (Lambert, 1990; Barling & Sorenson, 1997; Kossek & Ozeki, 1998).

According to Marks, Scholarios et al (2001), for software professionals the boundary between work and life is generally thought to be blurred. This group has

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developed a kind of psychological contract where work-life integration, rather than separation, may be the expectation. There is a pattern of work organisation and management associated with software professionals that identifies the work as `knowledge-intensive'. The core tasks of software work involve highly specialised tasks, such as systems analysis and software design. It also involves negotiations with users and problem-solving following implementation of a system, and it also requires a considerable degree of communication and co-operation (Beirne, Ramsay & Panteli, 1998; and Ramsay, 1999).

The predominant view of the software employee is of a highly qualified individual engaged in demanding, open-ended work usually conducted in low bureaucratic working environments (Alvesson, 1995; Kunda, 1992). It has been argued that knowledge workers who receive the levels of pay, advantages, such as autonomy, and status usually afforded software professionals are subject to `norms of reciprocity' (Gouldner, 1961). Thus knowledge workers are expected to promote high commitment to the work, to identify with the goals of the company and generally to make a commitment to long working hours when required (Kunda, 1992).

2.9.3 Telecommuting

According to the Department of Public Enterprises (2000), teleworking is an essential component towards introducing and supporting a new paradigm of work. The report emphasised the benefits of teleworking for organisations, individuals and public authorities. It noted that a considerable number of individuals have opted to use teleworking as part of their work to reduce commuting, to exercise more control over their work patterns and to achieve a better balance between their roles as part of the labour force and their other roles as citizens of society outside work. The report concluded that teleworking creates an environment for new jobs and has the potential for improving the quality of people's lives.

According to the Irish Business and Employers confederation (IBEC: 2000), 'teleworking' or 'eWork' is still not common in the Republic of Ireland though several

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larger firms have embarked on it. Recent figures published by the Department of Enterprise, Trade & Employment in 1999 estimated that 3.5 percent or 50,000 of the Irish labour force are e-workers by broad definition. However, formalised eworking arrangements remain one of the least common flexible work options utilised by Irish companies. Where Irish companies have eworking employees, the arrangements are frequently facilitated on an ad hoc or informal basis, typically following requests from individual employees. However, the report also states that more and more employers are now investigating the introduction of formal eworking initiatives as a flexible work option, particularly for employees with caring responsibilities or those who have to commute long distances. Companies are also exploring the possibilities that eworking can offer in terms of developing and expanding ebusiness opportunities.

2.9.4 The Work-Life Boundary in Software Work

The conventional stereotype of software developers is the male `techo nerd' who is married to his work (Ramsay, 1999). Kanter (1977) describes work and non-work spheres of life as `integrated' rather than `separated'. In meaningful jobs that provide high financial rewards and opportunities for advancement like those of software professionals, workers are required to be exceptionally dedicated, and family and home life may need be accommodated to the higher demands of work (Kanter: 1977). According to Hall and Richter (1988), each of these conceptions of the overlap between work and non-work life suggest that the boundary is inflexible and impermeable both in terms of time and location, often leading to conflict between the two domains.

The recent rise in interest in work-life balance has promoted the idea that employers should do more to enhance flexibility. Family-friendly working practices, for example, are intended to help reduce the conflict between domains to the mutual benefit of employees and employers. Work-life concerns are added to an organisation's bundle of practices that are designed to benefit competitive strategy - to aid attraction and retention in tight labour markets, alleviate high levels of absenteeism, and establish long-term relationships with employees based on commitment and productivity (Osterman, 1995; Barling, 1994). According to Kirchmeyer (1995), this `paternalistic' strategy means that organisations essentially take responsibility for some of workers' nonwork

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responsibilities, such as through provision of childcare, company memberships in fitness centers, or provision of financial and legal services, for the benefit of work efficiency.

Kirchmeyer (1995) argued that this approach is appropriate where integration between work and nonwork life is an expectation and should be based on the concept of `mutuality' in the employer-worker relationship. The flexibility afforded by strategies like flexible hours, alternative work arrangements such as teleworking, or policies discouraging disruptive work-related travel, would be expected to help individuals manage the work-nonwork boundary themselves and reduce potential conflict between the two domains.

It has been found that the existence of family-friendly practices is related to higher organisational commitment and job satisfaction amongst men and women of different household status, but only when individuals feel free to use them (Eaton, 2000). This relates again to how perceptions of organisational support may generate feelings of reciprocal obligation. High occupational commitment amongst software professionals may have implications both for employees' perception of their work-life boundary, organisational commitment and intention to remain with the company. Alvesson (2001) states that commitment to long working hours is a characteristic of knowledge-intensive workers resulting from high intrinsic motivation or because norms of reciprocity cause them to expect high financial rewards and autonomy in return for their effort. Amongst these workers, some negative work-to-nonwork spillover may be expected if not desired.

English-Lueck (2002) carried out a ten-year anthropological study into the everyday lives of people living and working in Silicon Valley, an area of great ethnic and cultural diversity. Software engineers were observed in conversation around water coolers in their workplaces, mothers'concerns at group lunches were recorded, and workers in rush-hour commutes were monitored. English-Lueck (2002) concluded that parents and children were connected through a fragile network of cell phones, pagers, faxes and e-mails, and were obsessed with the same goals that drive companies throughout the region: speed, improving productivity and a constant need to upgrade. Family life in Silicon Valley is inundated by techno-gadgets, and fragmented into "chunks" of time, leading to increased stress.

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Observations from the study indicate that family and social life in Silicon Valley is often viewed through the demands of work. Families use free time to network, whether at the coin-operated laundry, neighbourhood picnic or soccer game. Families use their technology to balance a nonstop schedule of meetings, school, social functions and errands. Technology is all pervasive. People use technology to avoid face-to-face meetings, thereby reducing real social contact. Families wonder how their children will be affected by a lifetime of Internet access, and say they feel constant pressure to "update" or "refresh" their lifestyle (English-Lueck: 2002).

2.9.5 Quality of Life Measurement

Osberg and Sharpe (2000) devised a measure of quality of life with four classes of indicators: consumption (both private and government), wealth (including housing), economic equality (measured by income distribution), and degree of poverty (risk of unemployment and illness). The importance of job characteristics like job security, adequate income, and the number and timing of hours worked has been acknowledged by Piotrkowski, 1979, and Staines & Pleck, 1983. Using their 'quality of life' measurement, Osberg and Sharpe compiled data for fourteen countries, from 1980 to 2000. Their data for five of the countries show Norway on top of the scale in both the economic well-being (23%) and economic security (7%) charts. The US was second in the economic well-being chart (12%), and third (-17%) behind Canada in the economic security chart. Both Sweden and the Britain finished lowest in terms of both economic well-being (-10%, -4%) and security (-25%, -40%).

2.9.6 Concern for Work-Life Balance

Cascio (2000) states that the twenty-first century has brought a new psychological contract between employer and employee. Employers who wish to reduce staff turnover need to introduce work-life policies. However the most progressive work-life policies are useless unless the culture of the organisation supports them. When supervisors and co-workers do not support employees taking paternity leave, or using flexitime, then the policies will fail to promote the kind of commitment and organisational attachment that employers hope for.

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Bond, Galinsky and Swanberg (1998), state that family and personal issues impinge a great deal on work. They state that 85 percent of workers have some day-to-day family responsibility, and that identical proportions of male and female workers report work-family conflicts. Among married employees, 78 percent have spouses who are also employed.

Johnson (1999) states that nearly one in five American workers (19 percent) have children under age six living at home. More than one-third of employees in the US must have child-care arrangements in place in order to work. Johnson (1999) also reports that in professional service firms, over half of the employees can be expected to experience some kind of work-family stress in a three-month period. It was found that employees who believe that work is causing problems in their personal lives tend to make more mistakes at work.

2.9.7 Family-Friendly Policies

According to O'Donoghue (2001), Ireland and the European Union have begun to introduce family-friendly policies in the workplace, mainly in public sector and multi-national companies. Policies aim to assist employees in combining family and work responsibilities, and these policies consist predominantly of flexible work arrangements and voluntary employment breaks. They tend to be informal and agreed on an individual basis.

Family-friendly work policies, with the dual functions of facilitating employee non-work needs and allowing employers to retain and recruit valuable employees, have become the focus of much debate in recent years, both in the Republic of Ireland and abroad. There are many reasons for this. A number of factors coming together over the last number of years have compelled both employers and employees and indeed governments, to examine ways in which work was traditionally organised (O'Donoghue: 2001).

For employers, issues such as globalisation of competition, changing communications and information technology, continued pressure to reduce costs combined with structural changes in the labour market have necessitated a major reappraisal of ideas, concepts and methods of organising work. The need for a quick,

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high quality and specialised response to market demands has meant that a growing demand for flexibility in abilities, relationships and organisational structures has emerged to meet changing business needs. Primarily because of changes in technology, companies can now operate around the clock using a mixture of new and old methods of operating such as shift work, week-end work, overtime, annual hours, flexible hours, temporary work and contracting out. Employers also no longer require all employees to be located in the physical workplace as employees can work some or all of the time from home (O'Donoghue: 2001).

Business leaders are starting to recognise that successful companies of the future will need to embrace a broadening of accountability to include social and ethical values as well as shareholder values. Family-friendly practices are an important way to enhance the organisation's reputation with customers and in the community. Many companies prefer to use the term 'work-life balance' to describe policies that embrace the needs of employees at different stages of the lifecycle. Employers may want to keep valuable staff who need a flexible approach to work for different reasons. Young staff may want to leave work for a period of time to travel or to take time off to study. Work-life balance policies permit an organisation to address the needs of broader groups of staff (O'Donoghue: 2001).

Family-friendly policies cover a range of options, including flexible working time, flexible leave arrangements, voluntary breaks, and other initiatives. Flexible working time refers to flexibility in the number of hours worked and the distribution of hours worked over time. This may include part-time working, telecommuting, job sharing, term-time working, flexitime, personalised hours or flexible hours, compressed working week, or annual hours. Flexible leave arrangements include compassionate leave, such as during bereavement, marriage or paternity, enhanced maternity or adoption leave, and emergency leave. Voluntary breaks refer to breaks away from current employment, with a guarantee of a return to work within a certain time period. This includes career breaks and special leave for care-givers. Other initiatives that may be introduced to benefit families include childcare support, resource and referral services, employee assistance programmes, parenting education and counselling services (O'Donoghue: 2001).

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2.9.8 Part-time Work

According to Tolliver and Chambers (1997), the quest for balance between achievement at work and having a rich personal life, particularly for women, has given rise to a new breed of part-time professional employees. These highly skilled, experienced professionals are trading off fifty-hour work-weeks, second shifts and child-care demands for more home and family time. Women still want to make a significant contribution at work but they also want to spend more time with their families. Tolliver and Chambers (1997) identify telecommunications and engineering as areas where there is great scope for part-time work. Tolliver and Chambers (1997) list the options that are open regarding part-time work: standard part-time where a reduced schedule is worked, job sharing, telecommuting where work can be partially or fully done from home, temping, and becoming self-employed.

2.10.0 Problems at Work

This section examines existing theory and research in the areas of worker dissatisfaction, workers' burnout, workaholism, and relationships and family life.

2.10.1 Worker Dissatisfaction

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 percent) with the statement that 'there are a lot of politics involved in getting promotions and recognition". 43 percent of employees strongly agreed that there was "conflict...between quality of performance and quantity of work". 41 percent of employees strongly disagreed with the statement that "salary is equitable", while 44 percent strongly disagreed that "new employees receive adequate training".

2.10.2 Workers' Burnout

Cohen (2002) describes the life of a cube dweller, a worker lost in the world of high tech who is suffering from soul starvation. Cohen (2002) blames America's twenty-four hour-

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seven day a week work schedule as the main reason why workers, especially technology workers, become stressed out and unhappy. According to Cohen there are two elements that make life 'suck'. These are environment and attitude. We have little control over environment that is mainly economic and social, but Cohen (2002) argues that we can do something about our attitudes in order to create a better life for ourselves. Cohen believes that high tech workers need to nourish other parts of themselves besides the computer wizard or the network genius. Working eighteen hours a day makes work and life begin to feel drab and joyless. Cohen (2002) suggests that workers need to take breaks every couple of hours to refresh themselves. Daily soul renewal is needed to avoid burnout. The body, the mind and the soul need nourishment outside of work. Cohen (2002) urges workers to stop giving their power away to anyone or anything outside of themselves. This happens when people keep trying to prove themselves, often under impossible conditions. He encourages workers to do what brings them a feeling of life, and not what deadens and drains them. The old adage of all work and no play making Jack a dull boy is emphasized by Cohen (2002), and he appeals to workers to bring more fun, leisure activities and family time into their lives.

Rogers and Larson (1984) state that burnout can occur in any industry but it is especially characteristic of work in Silicon Valley, even when people are still young. No one expects to leave the microelectronics industry but it can occur during a layoff or merger, or by falling fowl of a difficult manager. Employees who find themselves repeatedly out of work may find it difficult to summon up the kind of enthusiasm and commitment to a company that will probably dump them when times get tough. Workers who try to get off the thread-mill but still remain in Silicon Valley often try to work part-time or start up a consultancy where they may work from home. Those who burn out simply drop over the edge and are finally not around any more.

Kidder (1981), charts the work ethic and practices of Data General, a Fortune 500 company based in Massachusetts. Kidder describes the firm's 'microkid' engineers, all in their twenties, living in fear of being thrown on the scrap heap if they don't manage to get promotion to manager level by the age of thirty. Engineers live under intense pressure, working long hours, struggling to keep up with changing technologies, and wary of the latest skills and concepts brought in my fresh graduates. A long-time tiredness often

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creeps over engineers who still pursue this work in their thirties. According to Kidder (1981), there is no such thing as a middle-aged engineer: you've either attained the ranks of manager or you've burnt out and failed to make the grade.

Shapero (1985) states that burnout can occur due to a number of factors including emotional difficulties arising from work of a highly traumatic nature, due to simple boredom, or due to the loss of idealism and belief in oneself, one's company or one's career. The loss of the capacity to function due to an overload of one's emotional circuitry is applicable to some professionals when placed under extremes of stress or demand. Shapero (1985) urges companies to invest more resources in their employees to make sure that burnout does not occur. The full replacement cost for a competent, experienced professional employee is incalculable, as large investments are made in workers in terms of training, induction period, and on the job experience. Shapero (1985) suggests that preventative maintenance should be practiced by companies, such as training and development, and also a counselling referral service should be made available for any professional who is having problems with addiction, depression or family matters.

2.10.3 Workaholism

Mosier (cited in Hampson: 1990) researched workaholics, defining a workaholic as anyone who works more than fifty hours a week. Mosier traced the careers of her subjects and found that workaholics lag behind in promotions in certain fields simply because their single-minded devotion to work stunts their development in other areas of their lives. These workers were found not to be well-rounded individuals and were not sought out for upper management positions. Mosier (1990) concluded that workaholics are not as successful as their more balanced co-workers.

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 a neurotic compulsion to succeed. This frenzied activity however ensures eventual disaster. Hampson (1990) describes another type of worker who also works with a burning passion but who creates and produces from a more serene

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place within. These workers experience peace and strength, are mentally free and clear to focus on their work and so achieve much more real progress and productivity.

Schor (1991) states that the young American high-achieving professional may work a required 60, 80 or even a 100 hour week, and this creates a whole workaholic culture. There is a tendency to come to work earlier and to leave later in order to survive in many US corporations. The downsizing of companies in the 1980s led to remaining workers having to work harder to stay employed. The prevalent myth of the 1970s that the working week would be cut and that a leisure culture would develop throughout the western world was drastically overturned. Schor (1991) estimated the annual hours of paid employment worked by labour force participants in 1987, based on statistics published by the National Income and Product Accounts in the US. Findings revealed that an annual total of 1949 hours were worked by the average US employee. This represented an increase of 163 hours, almost a full month's increase in work per year, since 1969. Schor (1991) refers to a number of factors that have driven up the number of hours worked. These include workers holding more than one job to make a living, working more overtime, and receiving less vacation time from US companies.

2.10.4 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). The workaholic nature of the high-tech industry puts a severe strain on relationships and family life. An article in 'California Today' (1981) cited by Rogers Larson (1984) states that divorces outnumber marriages in Santa Clara County. It also reports that the divorce rate in Silicon Valley is higher than the rate for California as a whole, and California's rate is twenty percent above the US average.

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. Hollands (1985) conducts a psychotherapy and marriage counselling practice in Mountain View, California, which is at the heart of Silicon Valley, where over a thousand electronics-related companies are

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located. Hollands (1985) states that partners complain that their engineering spouses spend most of their leisure time in front of a computer, becoming obsessed with their inventions and their concepts, while becoming more emotionally distant from family. According to Hollands (1985), some of the symptoms that technology workers and their spouses present with include alcoholism, depression, sexual disorders, obesity, obsessive behaviours, family breakdown and emotional burnout. According to Hollands (1985), the pressures of the job, as well as the professional technology training creates a logical, efficient, precise and critical person who has learned to be unexpressive, unemotional and to bottle up his or her feelings at all costs.

According to Hayes (1989) Silicon Valley workers become alienated from each other, and most especially from family and friends due to the abnormal working hours. In order to deal with job stress and lack of social contact, Hayes (1989) states that workers turn to substance abuse, counselling and therapy, unhealthy and obsessive diets, a gruelling athletics regime and compulsive shopping.

Cringely (1992) states that Microsoft's employment trend is to hire kids just out of college who are prepared to work incredibly long hours. These graduates have a distinct advantage if they are not married. Cringely (1992) quotes a Microsoft middle manager, whose comments about the undesirably of employing married workers 'who have other priorities other than work', were presented as evidence in court that Microsoft discriminates against married employees.

2.10.5 The Unpredictable Workplace

According to Cascio (2000), the psychological contract that binds workers to organisations has changed drastically due to downsizing and restructuring. The old adage that a job was for life, that work could be secure, predictable, with standard duties and initial training of skills, is no longer the case. Work is full of change and uncertainty, and jobs are temporary. Flexibility, high levels of performance, lifelong learning, and self-reliance are valued by organisations in the millennium, replacing old values of loyalty and service. Cascio (2000) states that workers are more likely than even to become unemployed many times over. Career survival is now firmly in the hands of individuals,

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just as though every worker was self-employed, constantly on the look out for potential clients.

2.10.6 Globalisation

Changes in work practices have occurred due to many factors but most notably due to globalisation, technological development, intellectual capital, speed in market change, and cost control (Cascio: 2000). Globalisation which entails doing business without borders, has been accelerated by the growth of the world-wide-web. Almost anything can now be bought via the Internet, making this a huge market to explore, but also providing tough competition for existing firms all over the world. The advent of telecommunications, multinational organisations, free trade among many nations, international investment, and global standards for trade have all created conditions for globalisation. In this new world of work it is quite common for people from different cultures to attempt to work together. Cascio (2000) states that cultural differences within the workplace can lead to great misunderstandings and problems, in terms of codes of conduct, communication styles, beliefs and attitudes, and work motivation.

2.10.7 Lack of Loyalty in the Workplace

The impact of globalisation has forced many companies to become more competitive by streamlining staff through downsizing and layoffs (Cascio: 2000). In 1998 US companies announced over 600,000 staff cuts. The result of the constant threat of downsizing has however had serious consequences for companies as workers at all levels feel a great sense of mistrust and a profound lack of loyalty. According to Reichheld (1996), US companies lose half their employees every four years, half their customers in five years, and half their investors in less than twelve months. The cost to companies of losing a typical worker is estimated to be $50,000 (Reingold: 1999).

Since companies no longer guarantee lifetime employment, they can no longer expect to receive blind allegiance from staff. Instead many companies offer short to long-term contracts, with the option of renewal. In return companies expect workers to build loyalty to a vision or mission, much like professional sports teams demand of their players (Reingold: 1999).

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2.10.8 Career Success Redefined

In the past, companies took primary responsibility for managing the careers of their employees. In today's evolving world of work individual workers need to take responsibility for their own career (Hall and Mirvis: 1995). Due to the constant threat of downsizing workers no longer have a traditional view of career success, which previously was associated with life-long employment and promotion. Hall and Mirvis (1995) state that many workers suffer from stress, burnout and psychological withdrawn due to their lack of traditional success at work.

A new model of career progress must therefore be created to reflect the realities of modern work life. Hall and Mirvis (1995) advocate the model of the cyclical career where periodic cycles of skill apprenticeship, mastery and employment, and reskilling will occur. Lateral rather than upward movement, cross-functional experience, multi-skilling and continued employability will constitute career development. The new goal of career success will be the feeling of pride and personal accomplishment that comes from achieving one's goal's in life, such as family happiness, inner peace, or some personal achievement (Hall: 1996).

Despite the uncertainty of employment in twenty-first century corporations, high-skill autonomous workers are motivated by personal commitment to the standards of their occupation and hence they still strive to maintain performance (Herzenberg, Alic, and Wial: 2000). Performance in the case of such workers is largely subjective. It usually depends on peer judgement as to the quality of work, for example in the case of computer code generated, marketing material created, or administration guides written.

2.11.0 Professional Development

Professional development of IT professionals, professional development plan, professional development educational model, professional training in IT, and continuing professional development are reviewed in this section.

2.11.1 Definitions of Professional Development

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According to Broadwell and Sizeman-House (1986), professional development refers to the long-range usage of potential. Development looks at some level of potential assessment, determining where there are areas that could be developed for future activities in an organisation, perhaps involving promotion and extra-responsibility. According to Gaff et al (1981), there are four key steps toward greater professional awareness. These are subscribing to a general periodical available in one's field; subscribing to several good newsletters; receiving notice of new relevant publications; and spending a few hours regularly in the library perusing key professional journals.

The professional development movement was influenced by psychologists who began studying the adult years of development with greater interest (Gaff et al: 1981). Gould (1972) and Sheedy (1976) outlined the stages of adult development that most people go through, from entering the adult world with hopes and dreams, to seeking employment, and establishing a suitable way of life, to asking questions about the meaning of life. According to Gaff et al (1981), professional development is just as much about adult change and growth as human development is. Adults are unfinished products who need to learn new skills and strategies to cope with work and life.

2.11.2 Professional Development of IT Professionals

According to Chan (1992), professional development is an integral part of the activities of any IT professional. This development starts with initial training, and continues on throughout the entire career. An IT professional has to dedicate both time and effort to keeping up with the rapid changes in technology if he or she wishes to survive in the profession. This applies to every IT professional, regardless of specific experience, level of responsibilities, the nature of the job, or the country of employment. Professional development is therefore an important part of the IT person's career, where continued proficiency and professionalism needs to be maintained through employment in the workplace and through systematic updating of skills.

Chan (1992) suggests that changes in technology are so great that individuals cannot handle their education alone, but need cooperation from organisations, such as employers, professional societies, and from training and educational institutions. Professional societies normally require their members to commit themselves through

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their professional codes of conduct to maintain professional competence. However, since IT professionals do not require a license to work, a society can only threaten members with expulsion if they do not comply with continual professional development requirements. The ability of IT professionals to gain employment, however, depends on their level of competence and knowledge of new technology, so it is ultimately in their own interest to update skills.

2.11.3 Professional Development Plan

Chan (1992) states that IT workers must develop the ability to review their exiting skills and compare these with current market requirements. They must be able to identify their shortcomings and select the best available method of improving their skills and knowledge. According to Chan (1992) every IT worker should have a professional development plan. This involves developing all the goals and milestones clearly listed. Time for training and reading journals must be scheduled, despite pressure from work and demands of personal life. This plan must be updated and monitored periodically.

Chan (1992) states that in order to survive in the IT industry a person must possess essential life skills such as self-development skills, learning skills, self-management and self-organisational skills. Chan (1992) concludes that professional learning is a life-time process and must be given priority.

2.11.4 Professional Development Educational Model

Perez and Pino (1992) advocate that IT organisations should develop a model of continued training for professional staff. Using this model companies could introduce training as follows: the conceptual, methodological and technical aspects of new hardware and software tools as developed by the organisation and competitive firms; the organisation's structure and managerial practices, including long range planning; the relationships between the organisational management system and the IT-based information systems; user training as directed by IT staff; training in new products and new applications; distribution of technical trade journals and periodic courses in new technology to avoid obsolescence.

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Wada et al (1992) developed a standard professional function model of training for IT workers within the workplace. This model describes the tasks required of each IT professional, including the project team manager, the systems analyst, and the programmer. Each IT role is divided into three levels of expertise, and the skills needed to perform a series of tasks to fulfil each role are outlined. Changes in the skills needed to perform tasks due to changes in technology are included in the plan, and those workers who require training in new areas are identified and training is provided. In this way IT staff have their skills periodically updated and the company insures that expertise is available.

2.11.5 Professional Training in IT

Balasubramanian (1992) describes professional training for software engineers that leads to an undergraduate degree. Technically orientated aspects that need to be mastered include: requirements analysis, architectural design, detailed design, user acceptance test plan, coding, unit testing, and integration testing. Managerial oriented aspects include: software planning, estimation of development cost, documentation, requirements specifications, software specification, project planning and control, project management, and management process models. Software maintenance environment covers computer operations, networking, and software quality assurance.

Hung and Kwok (1992) outline the degree in computer studies curriculum as taught in Hong Kong. This course consists of several modules including computer systems, data structures and databases, computer organisation, operating systems, data networks, introduction to software engineering, introduction to information systems, program systems, logic programming, compiler design, data and knowledge engineering, artificial intelligence, software systems, statistics, discrete mathematics, business and communication skills.

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 (1999) suggests that companies should conduct formal training and development programs, encourage informal learning and reward those workers who

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embark on continuous learning. Formal training, due to its high cost, must be linked with the company's strategic priorities. Mandatory training may be offered to all employees to provide them with a shared vocabulary as to product information, company targets, and technical data.

Horibe (1999) also advocates the introduction of an individual learning plan that helps individual workers map out the experiences and training that they need to remain successful. This plan may involve taking a class to update technical skills that the firm deems to be important. Alternatives to classroom learning may involve encouraging employees to read trade journals to keep their knowledge current, or to use software tutorials to learn new skills. Mentoring programs that link senior employees with more junior ones may be used to teach new skills and to foster informal learning between peers. Mentoring needs to be voluntary to have any chance of working, and also both peers chosen to work together must be a good match. (1999) Horibe also suggests that learning should be rewarded, such as funding courses, or giving bonuses to those who learn a new skill that is valuable to the company, either through formal or informal learning.

2.11.6 Continuing Professional Development (CPD)

According to the British Computer Society (BSC), it is imperative that IT professionals maximise their potential for life-time employability. Therefore they must invest in continually upgrading their skills and knowledge. BSC obligates members to take part in continuing professional development (CPD). Members are provided with information and guidance to assist them in developing their expertise, in planning their learning needs, and recording the activities that they have undertaken to satisfy those needs. In this way members may maximise their employability. This service is free to BCS members.

A logbook is issued and each member is required to record the following information at the beginning of each year: current year development plan, record of CPD activity, evaluation of CPD undertaken. Activities are allocated points depending on the relevancy to professional development. For example, a course of study that leads to an industry qualification is awarded one point for each hour of tuition undertaken. The BCS

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recommends that members should seek to achieve an average of at least 20 CPD Units per year (source: www.bcs.org.uk).

2.12.0 Training

This section examines existing theory and research in the areas of training technical employees, developing a training policy, and training professionals in the workplace.

2.12.1 Training Technical Employees

According to Broadwell and Sizeman-House (1986), technical people are among the best educated and skilled in any organisation. Some technical people need to receive in house training when it is to the benefit of the firm. Training is necessary when an employee cannot 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.

2.12.2 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 to the performance of newly trained employees. Training is a large investment that the firm makes for 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.

According to Broadwell and Sizeman-House (1986) a training policy should include the amount of training that is necessary for any job or task. It should also list the time and duration of training, whether at induction or when the employee has completed a probation period. The priority of training should also be stated, such as areas where training is most crucial to the success of the operation. The selection procedure for training employees, such as length of service or special abilities, should also be stated.

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Training may be determined from a performance appraisal when employees' strengths and weaknesses are accessed. Broadwell and Sizeman-House (1986) conclude that there is no substitute for adequate training, and despite the initial financial outlay, it saves money and adds to productivity in the long-term.

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. Industry in the US is strongly oriented towards short-term profitability. Hence participants in training programs are chosen on the basis of corporate priorities, and not on individual needs. When companies view training as a necessary response to changes in technology, products, organisation or external regulations, they may introduce a whole curriculum of materials for various personnel. Companies may also provide training for professional staff and mangers they wish to promote to new levels or areas of responsibility. The format and content of programs are tailored so as to produce immediate and tangible returns. Thus corporate training is in contrast to colleges and universities which exist to foster individual development and to bring about the greatest long-range enhancement of the learner (Cross, Lynton, Nowlen and Stern: 1981).

2.12.3 Training Professionals in the Workplace

Schmidt (2000) states that professional workers are trained to be uncritical and ideologically obedient, in terms of the attitudes they display at work and in their work. Schmidt cites the US Bureau of Census (1990) in his definition of professional occupations, which in the IT sector includes systems analysts, software specialists, and engineers. Schmidt states that professionals may be distinguished from non-professionals, not only from their learned technical skills but from their political skills, in terms of adjusting their attitudes and values to those of the hierarchical corporations they work for.

Schmidt (2000) states that professional workers learn to be submissive, to follow their manager obediently and not to question authority, to ruthlessly adhere to corporate ideology and to freeze out those who display different values or critical thinking. Schmidt compared the training and indoctrination that many professionals receive with cults that offer an organisational identity where disciples may feel they belong, in return for blind obedience and unquestioning allegiance.

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2.13.0 Personal Development

In this section literature and research on personal development will be examined. Areas discussed include level of personal development, personal development plan, relaxation, motivation, goal-setting, time management, productivity, personal action plan, assessing current situation, planning how to achieve objectives, gathering resources, time scheduling, learning for personal development, problems in personal development, drive towards self-development, mindfulness, and development throughout the life cycle.

2.13.1 Level of 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. Goal setting refers to setting short-term goals in career and in one's personal life. Most technical workers are used to making plans when they are in college but may forget that goal-setting is effective at all times in out lives. Life becomes more meaningful when people are setting goals and asking questions, such as 'where would I like to be in five years time?', or what would I really like to do with my life?'

Broadwell and Sizeman-House (1986), state that reading develops the self as well as one's interests. This is good for making connections with people at work, but also for building interesting friendships and relationships. Reading literature and books on management and self-development broadens the individual's way of seeing the world. Attending meetings and seminars brings people together from different backgrounds and cultures. Sharing knowledge may add to our development and to our range of contacts. Personal effort is required as people need to make a commitment to become a better engineer or technical person, but also to become a more all-round individual.

2.13.2 Personal Development Plan

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

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classics, working out any quirks that are annoying to others, learning how to manage time more effectively, developing hobbies and enjoying leisure time, and finding time to unwind with family and friends.

Handa (1984) discusses the various ways in which people may enhance their potential through personal development. He begins by stating that many human beings possess great potential but very few make optimum use of their hidden resources. Handa (1984) advocates the practice of several key disciplines to help cultivate success, good health, and happiness. These disciplines are relaxation, motivation, goal setting, time management, and productivity. Each of these is examined briefly below.

2.13.2.1 Relaxation

Handa (1984) states that the art of relaxation is developed by practicing deep breathing exercises, visualisation and mediation, spiritual practices, and regular physical exercise. These disciplines help the person to develop a positive attitude of mind so that stress is easier to cope with. Relaxation also helps to replenish physical and mental energy so that the person feels more alert and invigorated. This leads to increased clarity and awareness.

2.13.2.2 Motivation

According to Handa (1984) motivation needs to be developed so that desire, belief and positive attitude may help a person to set important goals and continue to meet them. Handa (1984) suggests that it is important to explore one's desires, beliefs and attitudes by writing about them. In this way any negative beliefs or fears can be brought to light and positively challenged.

2.13.2.3 Goal Setting

Setting goals entails writing down short term, mid term, long term, tangible, and intangible goals. These goals then need to be prioritised and any obstacles that might thwart the goals, or any resources needed to achieve goals should be listed. A time-frame should be established for the achievement of various stages of goals. It should also be investigated if goals are realistic and attainable, as a lot of time and energy will be saved if it is decided at this stage that a certain goal is not attainable (Handa: 1984).

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2.13.2.4 Time Management

According to Handa (1984) time management is important to make the most effective use of time in order to achieve various stages of goals. The time available each day, week, and month to work on a chosen project must be realistically estimated and recorded. This time schedule can be used in conjunction with the time-frame that has been previously drawn up to arrive at specific activities that must be completed within a certain time period. A record of goals, stages of goals to be reached, priorities and urgent activities must be kept, as well as the time needed to complete each activity, and the total time needed to complete the entire project. As activities are completed, the time schedule should be reviewed and updated with actual times of completion.

The advantage of drawing up a time schedule is that goals are broken down into manageable tasks of specified duration. It is clear from the schedule that the goal can be achieved if this plan is adhered to. According to Handa (1984) this is a good way of becoming self-disciplined, especially for those who tend to procrastinate, or lack organisation skills.

2.13.2.5 Productivity

According to Handa (1984) productivity is the end result of practicing the above techniques of becoming relaxed and clearing the mind, of motivating the self, of setting goals, and adopting time management to achieve these goals. Productivity comes from following a series of basic laws.

The first law states that we should use and develop our inner resources and abilities. The second advises us to recognise that change is part of life and that sometimes we need to embrace change in order to grow and develop. The third states that we should work with enthusiasm when we are employed so that we can reap the benefits of our productivity, and store some of our gains for a time of less plenty. The fourth law states that developing expertise in a skill increases our productivity. The fifth reminds us that all goals must begin by taking a first step, and that achieving goals depends on constant work, belief, and self-discipline.

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2.13.3 Personal Action Plan

Cartwright et al (1996) have developed an action plan as part of their instruction program towards personal development and competence. This personal action plan has four sections containing a total of seventeen elements. Anyone wishing to pursue personal development, especially to enhance personal competence, is recommended to complete each section in writing. The four sections are: assessing current situation, planning how to achieve objectives, gathering resources, and time scheduling.

2.13.3.1 Assessing Current Situation

The first section is a review of past experiences, present circumstances and goals. The first element is an analysis of the most important events that have shaped you, and your current situation in terms of home, job, family, and money. Your aspirations for the next year, five-years, and ten-years also need to be recorded. You are then asked to assess what cultural values, attitudes, and beliefs have influenced you. Finally you are asked to assess your knowledge level in terms of qualifications, skills, and aptitudes.

The second element reviews three team roles that you believe most apply to you, such as co-ordinator or leader. The third element – PEST analysis - explores political, economic, social, and technological factors that may be of benefit or hindrance to your goals. For example, a new grant available for starting a business would be an economic benefit, while a recession would be an economic hindrance. The fourth element – SWOT analysis – requires an analysis of strengths, weaknesses, opportunities, and threats to future success.

2.13.3.2 Planning How To Achieve Objectives

The second section looks at problems and obstacles that might block you from achieving goals, and also outlines a full planning process for deciding on objectives. The fifth element looks at how you manage change. This involves doing an analysis, based on Lewin's (1951) Force Field Analysis, of the factors that make you push forward towards a specified change in life, and factors that pull you back from making that change. The sixth element examines positive thinking and the importance of visualisation in achieving

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goals. This involves writing down goals that you wish to attain and visualising that they have already been achieved.

The seventh element focuses on developing a planning process for an activity or project you wish to undertake. This involves following a ten-step planning model: deciding on objectives; checking that objectives are in line with personal and work constraints; investigating alternatives that will help to achieve objectives; assessing the consequence of each alternative; assessing the resources needed for each alternative; choosing the alternative with the least problematic consequences; using the remaining alternatives as contingencies; gathering resources; checking back to see that objectives have not changed; and finally moving to the implementation stage.

The eight element explores excellence. This involves writing a report on an area where you have demonstrated excellence in the last few weeks, under the headings of: service, consistency, quality, and value for money. A note must also be made of any improvements that could have been made.

2.13.3.3 Gathering Resources

Section three focuses on gathering any resources such as finances, people, or equipment that can help you attain objectives, and also assessing the strength of your own inner resources. The ninth element identifies a project you would like to work on. The task here is to identify people who can help you at various stages of the project. The tenth element requires you to think of new ideas that may help you move forward with the project.

The eleventh element requires that you list two tasks that need to be completed, and that you adopt a positive attitude to successfully completing these tasks by paying attention to your thoughts, actions, manner of communication, and body language. The twelfth element focuses on how well you deal with stress. Topics to be investigated here include symptoms of stress, ways of coping with stress, and making changes that will lessen the amount of stress, such as finding more support.

2.13.3.4 Time Scheduling

The fourth section deals with time management and scheduling. The thirteenth element focuses on drawing up a time schedule or diary for every task you need to complete in a project, such as activity, start time, end time, duration, and comments. The fourteenth

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element requires reflection on feelings that might hold you back from achieving personal goals, such as fear or resentment. Steps to resolve these issues should be drawn up within a time frame so that progress can be noted.

The fifteenth element focuses on delegation. People who can give you support are identified along with suitable tasks that they may be willing to undertake. The sixteenth element identifies people who take up your time in unproductive ways, for example, through idle chatter or being unproductive. Possible actions that could be taken to free up time by no longer indulging these people should be noted.

The seventeenth element is a review of your personal goals. This requires that you develop a forward-looking approach and periodically restate life objectives, review current goals, be open to receiving support from others, develop new goals, and keep looking for opportunities to reach your goals and to enhance your life.

2.13.4 Learning for Personal Development

According to Cavaliere and Sgroi (1992), participating in learning for personal development leads to the experience of cognitive and psychological discoveries that bring about personal transformation. Waterman (1990) states that learning may be motivated by the desire to learn a skill or gain knowledge about an area that a person finds fascinating. Learning may also be chosen to gain self-knowledge through the process of understanding some problem, or learning may offer an opportunity to identify, affirm or extend one's identity as a human being.

Active learning when focused on developing the self may lead to profound change, even metamorphosis (Cavaliere and Sgroi: 1992). Learning may become deeply meaningful. It may even trigger a deep emotional response, such as a peak experience, described by Csikszentmihalyi (1982) as the zone for optimal flow. As the person continues to learn and develop accomplishments, a total revolution of being and thought may occur.

Gibbons (1990) proposes that there are three kinds of learning: natural, formal, and personal. Natural learning is interactive, where the individual interacts with the environment, and the necessary skills or knowledge required to navigate the environment

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are learned. Formal learning is directed through a systematically proscribed procedure, with a predetermined syllabus. Personal learning is self-initiated, and the individual designs the desired learning procedure to fit personal requirements.

2.13.5 Problems in Development

Lindgren (1964) discusses the problems that sometimes occur in personal development. In a complex, urbanised, multicultural society there are many competing demands placed on individuals to perform to high standards at school and work, to find a partner, to become financially secure, and to set up a home. People may suffer from acute stress and anxiety, feeling unable to cope with pressures and demands at work, or in the area of inter-personal relationships. Individuals may become depressed, withdrawn, insecure, and may feel like a failure among peers.

Lindgren (1964) states that people may need to seek professional support to help them gain insights into their problems, to encourage them to express feelings, and to help them attain small goals that will give them a sense of satisfaction and competence. Lindgren also advocates taking part in recreational activities. Hobbies can be a wonderful way of releasing tension, and letting go of frustration and hostility that may have accumulated at work or home, or due to feeling isolated. Playing a physical sport, such as basketball, football or tennis, can reduce stress. Even watching sport can help a person identify with a team and hence lower anxiety. Lindgren (1964) suggests that people should find hobbies where tension can be released, and that stimulate them both intellectually and socially.

2.13.6 Drive Towards Self-Development

The inbuilt drive towards self-development has been discussed by three prominent humanistic psychologists. Jung (1968) espoused the process of 'individuation', which led to the path of psychological and physiological integration and development. Maslow (1954) defined a theory of the hierarchy of human needs. These needs begin with basic survival at level one, and culminate with self-actualisation occurring at level seven: the need to fulfil one's potential. Rogers (1969) described a fully developed and aware human being as 'a fully functioning person'. According to Rogers (1969), a person who

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has attained this state initiates his or her own learning, and evaluates his or her own progress.

2.13.7 Mindfulness

Mindfulness is a state where the person is mindful of being in the present moment (Langer and Brown: 1992). Learning to be more mindful can greatly increase the rate of personal development and make it easier to cope with life's difficulties. Mindfulness helps a person to become aware of small problems as they are enfolding. Thus mindful people are less likely to be hit by huge catastrophes that they never have anticipated. Mindfulness also teaches people to face reality. For example, facing the fact that there is always uncertainty in life helps us to remain in the present moment and to observe what is happening around us. There is no benefit in worrying about the past or the future, because life happens in the moment (Langer and Brown: 1992).

Mindfulness also teaches that failure and success are no longer on opposite sides of the continuum. Instead both are seen as opportunities for learning and developing inner resources. Being mindful also helps people become clearer as to what they really want to change in life, such as in work and relationships (Langer and Brown: 1992).

2.13.8 Development Throughout the Life Cycle

Salmon (1985) discusses the changes that may occur in personal development over a lifetime. There is a huge rate of development in childhood and adolescence, when there are so many physical, emotional, social and intellectual skills to learn at school, and so many relational skills to learn in our intimate connections with friends and family. Middle age and old age are perceived as times when there is little change in development, in terms of learning new skills. It is adulthood where most discussions on personal development usually focus: finding and maintaining work and making a living; developing friendships and hobbies; finding a partner and starting a home and family. However according to Salmon (1985), change is part of life at every stage of the life cycle and with change there is always the opportunity for further personal development and growth.

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Salmon (1985) discusses the ways in which the social construction of our lives, from childhood onwards, defines our personal development. We constantly experience the behaviour of others in the context of their social status and their social group. Thus gender, class as defined by parent's occupation and economic standing, race, and creed each have an impact on how we see ourselves and how others see us. This influences our personal development in terms of expectations of education, career, relationships and hobbies.

According to Salmon (1985), for many people, personal and professional development are linked through their occupation. Western culture demands that work carries social status, and the higher this status the more worthwhile a person usually feels. This status is also tied up with the amount earned and the possessions owned. Western culture also views involvement in a long-term relationship as equated with adult maturity, and hence success at work and home is the yard-stick by which many people measure the quality of their lives.

Some people derive great satisfaction from work, in terms of feeling they have made a contribution, and in enjoying social interaction with work mates. Many others however are not happy with work life that is often highly pressured and competitive. People may turn to family and home to derive contentment and meaning. For those who are without a major relationship in their lives, hobbies and friends may become a major source of satisfaction (Salmon: 1985).

Major changes that occur in life may bring about profound upheaval (Salmon: 1985). The loss of a job or the contemplation of career change may have a long-term impact on home and social life. The loss of a partner through divorce or death may affect every aspect of life. Thus personal development is an on-going process, where we may periodically need to evaluate the important things in life, and formulate new plans to help us survive in times of crises, or to learn and experiment in times of plenty.

2.14.0 Life Long Learning

The concept of life-long learning is quite a modern one. According to Monroe and Heim (1991), US 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

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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 US and today appeals to a wide variety of people: housewives seeking new identities, engineers and business executives updating their skills, and both skilled and unskilled workers. Many professional workers are returning to education to avoid obsolescence. Others are enrolling in graduate school to earn further or advanced degrees (Chudwin and Durrant: 1981).

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 money and enrollments. Career-enhancing courses are offered through professional societies, private enterprises, in-service programs of business and industry, community colleges, federal, state and local government agencies, professional schools, colleges and universities.

Quinnan (1997), states that it is a foregone conclusion with colleges and universities that adults require learning specifically for career enhancement. According to research conducted by Dillman, Christenson, Slant, and Warner (1995) many adults do indeed participate in learning to improve a job situation and to enhance promotional prospects. However, Quinnan (1997) appeals to educators to consider the issues of self-concept, critical thinking, economic empowerment and cultural awareness, and to include these as part of adult education programs.

2.14.1 Avoiding Obsolescence

According to Kotter (1995), almost everything is becoming obsolete at a shocking rate in this fast-moving world. Concepts, designs, equipment, technological skills, and all kinds of knowledge have an incredibly short lifespan. Companies and individuals need to continually learn new skills and new ways of doing things in order to avoid becoming static, outdated and obsolete. A very important factor in career success, according to Kotter (1985) is the willingness and adaptability to continue to learn and grow. In our traditional way of thinking about education, learning was over when we completed a

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degree. Today however continued learning must be part of one's career plan in order to develop and maintain employment.

According to Kotter (1995) many factors are involved in the creation of a successful and highly employable worker. These factors include personal history, such as inborn capabilities, childhood experiences and job and educational experience. Competitive drive is determined by the level of one's own standards, the degree of achievement required and self-confidence in competitive situations. Lifelong learning is motivated by the willingness to seek new challenges and to reflect honestly on successes and failures. Skills and abilities include one's knowledge, intellectual abilities, and interpersonal skills. Competitive capacity is one's capability in dealing with an increasing competitive and fast-moving economic environment.

Kotter (1995) states that successful people learn to apply lessons they have learned, in family and personal situation, to work problems. They are capable of personal growth both inside and outside of work, whether through marriage crises, health issues or difficulties at work. Learning to transform life and work crises is a major strength for any person to develop. Success at work depends on learning new approaches, skills, and techniques, and continuing to develop the self.

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 professionals have become roughly half as competent to meet the demands of their profession as they were upon graduation. Dublin(1972) suggests that professional workers need to spend at least twenty percent of working time keeping abreast with new developments. Sharepo (1985) disagrees with this definition of obsolescence, stating that what is taught in college is often not as effective or applicable as that which is learned in the workplace. With regard to course syllabuses, Shapero (1985) states that in many advanced fields practice is far ahead of scholarship in terms of practical application and real learning. Shapero (1985) claims that professionals obtain most of their information from personal sources and through informal channels, such as newspapers or television, and not from literature. Shapero (1985) also states that no professional worker could possibly keep up with all

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technological changes in his or her field so as to be completely current on all required knowledge.

Oberg (1960) conducted a study on whether age was a contributory factor in professional obsolescence. A study of over nine-hundred technical professional male employees in an industrial laboratory was conducted to ascertain at which age workers were most valuable to the company in terms of productivity. Oberg (1960) found that employees reached two peaks of productivity in terms of age. For research and development (R&D) professionals, the most valuable age was found to be between thirty-one and thirty-five, and the next valuable to be between thirty-six and forty, and between fifty-one and fifty-five. For engineers, the most valuable ages were found to be between fifty-six and sixty, and between fifty-one and fifty-five, and the next valuable to be between forty-one and forty-five. These results showed that engineers' productivity tended to peak at an even older rate than that of R&D professionals, and that productivity for both groups occurred over the age of thirty.

Due to the constant rapid change in technological advances, workers need to continually update their skill-set. Since intellectual capital is now a prized resource, workers, especially those involved in information technology, must continue to accumulate knowledge rapidly (Cascio: 2000).

2.14.2 Adult Learning Methods

According to Galbraith (1990) every year millions of adult learners engage in educational programs provided by adults in vocational education, agencies and institutions, as well as business and industry. Various training formats are used to teach in a plethora of educational settings, such as lectures, discussion groups, mentorship, case studies, demonstration and simulation, forum and symposium, computer enriched instruction, distance courses and internships. Whatever the method, Galbraith (1990) argues that adult education should promote and encourage development. It should provide for growth and evolution of change.

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2.14.3 Adult Participation in Learning

Cross (1981) states that individuals need to be prepared to make learning a continuing lifelong activity. Lifelong learning is not a privilege or a hobby but a necessity for anyone participating in today's ever-changing world. UNESCO's supreme legislative body (1979) states that lifelong education denotes an overall scheme aimed both at restructuring the existing educational system and developing the entire educational potential outside of the educational system. In such a system adults are the agents of their own education. Cross (1981) states that the nature of lifelong education can be summarised in three systems: formal education providing graduate and adult classes, organisations and other learning resources providing life learning options, and learning which is self-directed where adults are the agents of their own education.

Cross (1981) cites Trough (1971) who used a broad definition of adult learner to conduct a survey into adult participation in learning. Trough (1971) found that 98 percent of adults could be classified as 'learners'. However, the National Center for Educational Statsitics (1980) conducted a survey of 'adults over seventeen engaged in some kind of organised adult education' and found that just twelve percent of adults were involved in organised education. Between these two extremes of definitions, Carp, Peterson and Roelfs (1974) conducted a national survey of adults in education. Their findings revealed that approximately one-third of adults received instruction in one or more of seventeen learning activities presented, such as hobbies, home repair, physical fitness, on-the-job training, and professional skills.

According to Friedman (2003), although economic times have become tough for Californian workers, as few as 10 percent of those expressing an interest in additional education or training actually enrol in a training program. Friedman (2003) states that the old concept of 'a job for life' is no longer relevant. Friedman (2003) quotes the US Department of Labour as stating that entrants to the workforce aged between 18 and 34 can be expected to work for an average of nine different employers.

The 1990s was a breakthrough decade in terms of the reinvention of lifelong learning and continuing education. This was also the time when corporate universities were created to serve workers, and full degrees were offered through the Internet. Friedman (2003) insists that workers now need to invest themselves in continued

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learning, as employers are less inclined to offer training and professional development support due to the high costs involved. Friedman (2003) concludes that working adults are among the fastest growing sector of college attendees in the US.

IEEE-USA carried an online survey on continuing engineering education (Johnson: 2003). Ninety engineers responded. The majority of respondents were aged between twenty-six and forty-five, and 86 percent were male. For these respondents, continuing education is definitely important to engineering careers. More than 93 percent rated it as very important. As for what influenced respondents' decisions to enrol in education or training, they indicated that they wanted to expand their skills and knowledge, to perform well in their present position or change employment, to be better qualified for a promotion or pay raise, and to earn a degree, certificate or pay raise, or to meet company requirements.

Almost half of respondents had taken courses for degree credit, and one quarter had taken courses for certificate credit. According to respondents, employers do not typically promise salary or career advancement to those who complete continuing education activities, nor do they offer continuing education courses on site. Employers do, however, offer moderate reimbursement and release time support. When considering support for educational programs, respondents noted that their employers focus on cost and curriculum offered, as well as its convenience to employers. Respondents stated that they preferred course topics in the following order: technical engineering, engineering or project management, teaming or communications. Respondents also provided insight about how they like to participate in courses. They prefered courses to be offered online or on site at work.

2.14.4 Non-IT Professional Status

According to Marks, Scholarios, et al (2001), unlike traditional professions (for example law or accountancy), access to software engineering and other highly skilled computing occupations is not formally regulated. For this reason, it is unlikely to possess the 'symbolism reinforcing identities' which lead workers to see themselves as members of a distinct professional group (Alvesson, 2001, p.1109). However, the pace of technology means investment in professional skills development, for example, learning new

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programming languages or keeping up to date with new developments, is critical for current and future employment within the occupation.

2.14.5 Pursuing Advanced Degrees

Kohl (1998), states that the growth of the information and technology sector has pushed the demand for professional higher education well beyond the goal of a bachelor's degree being refreshed by continuing education. Lynton (1984) agrees that people in professional roles need to acquire advanced qualifications just to maintain their standing in professions. According to Maehl (2000), as workers mature they discover new interests and areas of specialisation that their previous study has not prepared them for. Often changes in their levels of responsibility prompt professionals to seek a more advanced degree.

In the US, over the period from 1970–71 to 1994-95, degrees awarded increased by 72.5 percent at the master's level, and by 38.4 percent at doctoral level. From 1990-91 to 1994-95 master's degrees awarded increased by 22.6 percent, and doctoral degrees by 15.8 percent. The majority of degree seekers were part-time learners. (National Center for Education Statistics: 1998). A study of the value of the master's degree undertaken by the Council of Graduate Studies (1989) found that administrators, graduates and employers endorsed advanced degrees as providing a valuable framework for professionals in further learning. Maehl (2000) states that previous barriers to pursuing higher degrees, such as the need to return to full-time or part-time education, has now been overcome with the introduction of distance learning and more flexible attendance schedules. These degrees offer adult learners flexibility, while helping them to maintain the currency of technology knowledge.

Carnevale (1991), states that the transfer of information holds tremendous power in capital driven societies. This is particularly the case in technical workplaces where those who hold the key to graduate and specialised qualifications gain the most elite positions. Friedman (2002) emphasizes the benefits that workers receive from studying advanced degrees by quoting statistics from the US Department of Commerce which show that post graduate professionals earn 77 percent more than non-graduates.

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2.15.0 Professional Societies For Individuals in IT Sector

This section examines professional IT societies for individuals, including the Institute of Electrical and Electronics Engineers (IEEE), The Institute of Electrical Engineers (IEL), the British Computer Society (BSC) ,the Irish Computer Society (ISC), and the Society for Technical Communication (STC). Information for this section was obtained by using the various internet websites available for the respective organisations.

2.15.1 Institute of Electrical and Electronics Engineers (IEEE)

The IEEE is a non-profit, technical professional association of more than 377,000 individual members in 150 countries. It is the leading authority in technical areas ranging from computer engineering, biomedical technology and telecommunications, to electric power, aerospace and consumer electronics, among others. The benefits to IEEE members include the opportunity to participate in one of the 300 local branches worldwide, educational opportunities, and special discounts such as reduced insurance. The IEEE also represents members' interests, provides a code of ethics, and organises prestigious awards for technical and professional achievements (source: www.ieee.org).

2.15.2 The Institute of Electrical Engineers (IEE)

The Institute of Electrical Engineers (IEE), headquartered in the United Kingdom, is the largest professional engineering society in Europe. It has over 135,000 members in all aspects of electrical, electronic and manufacturing science and engineering. In addition to a full range of professional journals, magazines, conferences and books, the IEE produces the INSPEC database, the world's largest bibliographic reference service in the field of physics, electrical engineering and computing. It also provides members with a networking facility via branch meetings. (source: www.iee.org).

2.15.3 British Computer Society (BSC)

The British Computer Society (BCS) is the only Chartered Engineering Institution for IT. With members in over 100 countries around the world, the BCS is one of the leading professional societies in the field of computers and information systems. BCS offers three grades of membership: student, graduate, and professional. It also conducts a continuing

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professional development program to improve and update members' professional skills. Member benefits include the chance to network at branch meetings or through the Internet, and to receive discounts on software products (source: www.bcs.org.uk).

2.15.4 Irish Computer Society (ICS)

The Irish Computer Society was founded in 1967 as the national body for Information and Communication Technology (ICT) Professionals in the Republic of Ireland. Since its foundation the ICS has promoted the continuous development of professional ICT knowledge and skills in the Republic of Ireland by organising seminars, lectures and related activities. The ICS is a member of the Council of European Professional Informatics Societies (CEPIS). It also holds joint conferences each year with the Northern Ireland branch and the BCS (source: www.ics.ie).

2.15.5 Society for Technical Communication (STC)

The Society for Technical Communication (STC) is the world's largest professional association for technical communicators. Members are employed in various communications and technical professions including technical writers, editors, illustrators, web designers, technical translators, and managers and teachers of technical communication. With more than 20,000 members across the globe, STC provides members with the opportunity for continuing education and peer networking at branch meetings in many cities worldwide, and access to STC's database of job openings (source: www.stc.org).

2.16.0 Organisational Culture

This section gives definitions for organisational culture. It also examines existing theory and research in the areas of group co-operation, measuring organisational cultural difference, measuring values, and corporate values.

2.16.1 Definitions

Ott (1989) summarises the characteristics of organisational culture. This is the culture that exists in an organisation and is akin to a societal culture. It is made up of such things

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as values, beliefs, assumptions, perceptions, behavioural norms, artefacts, and patterns of behaviour. It is a socially constructed, unseen, and unobservable force behind organisational activities. It is a social energy that moves organisation members to act. It is a unifying theme that provides meaning, direction, and mobilisation for organisation members. It functions as an organisational control mechanism, informally approving or prohibiting behaviours.

2.16.2 Group Co-operation

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. Brown (1965) also states that firms should not offer purely economic rewards at the expense of the desire of workers for self-respect and social recognition. No remuneration can ever compensate for a firm's failure to treat workers as thinking, feeling human beings.

2.16.3 Measuring Organisational Cultural Differences

Hofstede (1984) describes the differences in organisational culture that exist between members of forty different nations. Hofstede (1984) 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 (1984) identified four main dimensions that emerged in the value systems of these countries: power distance, uncertainty avoidance, individualism-collectivism, and masculinity-femininity.

Power distance refers to the inequality that exits in an organisation. According to Michels' Iron Law of Oligarchy (Michels, 1915 [1962]: 342ff), every organisation

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develops its power elites. Inequality is essential for a firm to function, whether it is a multinational organisation or a political party.

Uncertainty avoidance refers to uncertainty about the future and concern about orientation, employment stability and stress. The ways in which workers' cope with uncertainty are rooted in collectively held values which are transferred by institutions such as family, school and state. Authoritarian personalities exhibit intolerance to ambiguity, dogmatism, racism and superstition, and need to feel in control of their environments. A feeling of uncertainty at work may be generated by the work environment, such as work conditions, or by the external environment, such as economic conditions.

Individualism describes the relationship between the individual and the level of collectivism that prevails in a given society. People's self-concept affects their level of individuation. Western society clearly rewards competitiveness, independence and personal achievement, whereas Eastern society gives recognition to cooperation, emotional support and taking responsibility for family or work colleagues. Certain industries, such as technology, are considered to function on the individualist paradigm (Stinchcombe: 1965, 145ff; Triandis, 1973). In Hofstede's research (1984), the US was found to be the most individualistic of all nations.

Masculinity refers to a set of traits that are rewarded and highly valued in certain cultures. Masculine traits include assertiveness, being active and forceful, taking risks, and having primary goals of advancement and high earnings. Feminine traits include advocating interpersonal relationships, stressing the importance of one's physical environment, being nurturing, seeking security, and creating a friendly and cooperative atmosphere. Hofstede (1984) found that Japan was the most masculine of all nations surveyed.

2.16.4 Measuring Values

Schwartz and Bilsky (1987) constructed a theory of the universal types of values. Values were viewed as cognitive representations of universal requirements: biological needs, interactional needs for interpersonal relations, and societal demands for group welfare and survival. From these needs, eight motivational domains of values were identified and

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defined: enjoyment, security, social power, achievement, self-direction, prosocial, restrictive conformity, and maturity.

2.16.5 Corporate Values

Ravlin (1995) states that values are a set of core beliefs held by individuals as to how they should behave in a broad range of situations. In many organisations however, values are considered the property of the organisation (Williams: 1998). Employees are expected to subscribe to a particular set of values that are advocated by the organisation. According to Williams (1998) the culture of an organisation provides the moral principles and behavioural guidelines that regulate employees' performance, in such areas as quality, excellence and ethics. The corporate-culture approach presumes that organisational cultures can be assessed, managed, constructed and manipulated to achieve enhanced performance (Meek: 1988). This view advocates that employees' beliefs and values can be changed so that they can make a greater contribution to the organisation. Brown (1995) states that a strong corporate culture facilitates goal alignment, engenders a high level of employee motivation and hence increases employee performance. This approach to organisational culture has gained wide acceptance as a means of social control where a harmonious environment can be created where employees are easy to manage (Martin: 1995).

Mabey and Salaman (1995) argue that several cultures may exist within an organisation that may lead to conflict. Martin (1995) states that organisations may be composed of overlapping subcultures that coexist in relationships of intergroup harmony, conflict or indifference. Brown (1995) puts forward the premise that a strong culture may not lead to high performance as employees' motivation may not be positive. The evidence of a positive association between culture and performance may indicate that good economic performance leads to concensus and a strong culture rather than the strong culture being responsible for the high performance.

The findings of Bate (1984) indicate that strong culture may lead to dysfunctional organisation. Bate (1984) identified six characteristics of a strong organisational culture: unemotionality, depersonalisation, subordination, conservatism, isolationism, and antipathy. Problems which emerged in organisations which displayed these traits

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included a low commitment and involvement in the change process, a disowning of problems and an abdication of responsibility for the search for solutions, a lack of openness in confronting and dealing jointly with issues, avoidance of data-gathering on the causes of problems, over-caution and a lack of decisiveness and creativity in problem-solving, erection of barriers to change, and the taking of adversarial positions on all issues regardless of whether any potential measure of agreement exists between the parties.

2.17.0 Critical Theory

According to Horkheimer (1972), the task of critical theory is to penetrate the world of objects to show the underlying relations between persons. Unlike positivist thought which accepts the role of science as the accurate recorder of facts and the discoverer of objective reality, critical theory proceeds from the theorist's awareness of his or her own partiality. Horkheimer (1972) holds that theory is neither neutral nor objective, but rather is partisan in terms of its goals, which are to look beyond the facts. Horkheimer (1972) states that the age of Enlightenment paved the way for the submergence of critical reason, where all metaphysical concepts, such as existence, soul and God, were separated from science, technology and reason. According to Horkheimer (1968) there is no essence of reason because it is the human being who thinks, and the human being who is living in a particular historical epoch.

Horkheimer's view runs contrary to the rationalist/positivist view that projected worldviews were untainted by the human beings that produced them, as though there was an eternal order intrinsic to reason. Instead of viewing truth as absolute, Horkheimer (1982) stated that the concept of truth is dependent upon ever-changing social conditions. He goes on to insist (1972, p. 188-243} that the social sciences, in modeling themselves after the natural sciences, attempted to occupy a central position in an industrial society dependent upon the monitoring and managing of socio-economic variables. In contrast, critical theory challenges the privileged 'absolutist' position of social scientific knowledge by analysing the modes of its production, the roles it played in society, the interests it served and the historical processes through which it came to power.

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Hoy and McCarthy (1994) emphasises the role that social and historical practices and beliefs play in the formation of individual reason. Critical theorists purport that an examination of the nature, scope and limitations of reason involves socio-historical and cultural inquiry that go beyond the traditional bounds of philosophical analysis. Hoy and McCarthy (1994) state that critical theory aims to become a factor in social change by becoming part of the self-consciousness of oppressed groups. Critical theory stresses that social research is itself a kind of interaction in which the objects of knowledge are potential subjects of the very same knowledge, and thus it is a potential factor in changing social relations. Critical theory therefore considers the purposes it serves as being central to the context of inquiry.

Hoy and McCarthy (1994) compare critical theory to postmodernist rhetoric in setting the particular against the universal: either one accepts totality, authority and homogeneity of the universe or one rejects it all in favour of the fragmentary, spontaneous, heterogeneous particular.

2.18.0 Post Modernism

This section examines the social philosophies of modernism and postmodernism, and the social changes that have been wrought in the postmodern, postindustrial age of unprecedented technological advances.

2.18.1 Modernism to Postmodernism

Harvey (1989), states that major changes have occurred in the quality of urban life since the 1970s. Postmodernism, a product of the 1970s, represents a reaction to or departure from modernism. According to Harvey (1989) modernism is an eighteenth century concept emanating from the age of Enlightenment, and is identified with the belief in linear progress, absolute truths, the rational planning of ideal social orders, and the standardisation of knowledge and production. Modernists held diverse and conflicting beliefs about their social, economic and political world. However modernism is centrally equated with the concert of the unity of all mankind, though that unity is more a disunity, as the transitory nature of existence and the continual threat of destruction and chaos are very much part of life. The modernism that emerged before the first-world war was a

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reaction to the industrial revolution with it's new conditions of productions, including machines, factories and urbanisation, and consumption. In contrast, Harvey (1989) states that postmodernists view heterogeneity and difference as emancipating forces in the redefinition of culture. The hallmarks of postmodernist thought are fragmentation, indeterminacy and great distrust of all universal totalising truths.

Habermas (1987), states that postmodernism is synonymous with anti-modernism, rejecting objective science, universal morality and law, and autonomous art. However, Graff (1973), argues that postmodernism should not be seen as breaking with romantic and modernist assumptions, but rather as a logical culmination of these earlier movements. Huyssen (1981) states that American postmodernism that developed in the 1960s was largely based on rupture and discontinuity, on crisis and generational conflict, on attacks on traditional and institutional art and culture, and on exuberant technological optimism.

According to Macionis (1999), modernity refers to the process of social change initiated by industrialisation. Thus modernity is equated with all the sweeping changes wrought by the industrial revolution and the advent of capitalism. Berger (1977) identified four major characteristics that denoted modernisation, namely a decline in small, traditional communities, the expansion of social choice, increasing social diversity, and a growing awareness of time and future orientation.

Postmodernity is hailed as the product of the information revolution, and refers to social patterns characteristic of a postindustrial society (Macionis: 1999). The term has been used since the 1960s by sociologists and philosophers who discredit the very foundation of science: that objective reality and truth exist. According to Macionis (1999), the characteristics of postmodernism include an emphasis on modernity's failure to create a life free from want and poverty; a stark pessimism that challenges modernity's belief that there would be a better world sometime in the future, whereas postmodernists argue that there will be further alienation, loss of identity, break-up of communities and social diversity; criticism that science has not solved individual or social problems, but has in fact created serious problems, such as degrading the environment; modernity's failure to bring about enhanced individuality and tolerance; modernity placed material

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things at the centre of the industrial revolution, whereas postmodernism emphasises ideas as the centre of the information revolution.

Lyotard (1986) acknowledges the emergence of a postmodern condition of knowledge where there is a shift of emphasis away from questions concerning the intrinsic value of forms of knowledge, and the end of goals of human conduct towards the promotion of knowledge as a means for optimising the efficiency of the performance of various systems, the rationale for which remain unquestioned. Lyotard (1986) also states that in respect of research the tendency is to fund projects that optimise system performance and to abandon those that do not. Similarly, education and learning are subject to the demands of system performance, more oriented towards the provision of training and the inculcation of skills, and rather less concerned with liberal values and ideals.

2.18.2 Technological Advances

According to Toynbee (1954), technological development has dramatically increased the extent of mastery over nature during the postmodern era, and is constantly accelerating the rapid process of social change in the western world. Smart (1992) states that although technological advancements have been enormous, the ability of human beings to relate to each other, and our capacity to cope with moral and political problems and conflicts has failed to keep pace. Toffler (1971) concurs that the scale and pace of social and technological changes are deeply problematic, and are beyond the ability of any individual to sufficiently adapt. Toynbee (1954) states that the only hope for western civilisation is to transfer its energy from economics to religion. Bell (1973) agrees with Toynbee (1955) that a return to religion is required if postmodern problems that have arisen from self-interest and the destruction of mankind's moral code, are to be resolved.

It is claimed that the US and other high-income societies are entering a postmodern era (Macionis: 1999). There have been enormous technological advances in the areas of genetic programming, in cyberspace and virtual reality. The postmodern condition suggests that the unprecedented progress in communications technology has led to an intense phase of time-space compression and fragmentation at a global level (Harvey: 1991). Castells (1996) describes how the technological infrastructure of a

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globally networked society defines a new space of financial markets and communication. People are now connected via the Internet rather than through any material location. Innovations in communication, production and distribution have radically changed our relationship to time. Tasks can be completed at unusual times and at any location.

According to Bender and Druckrey (1994), postmodernism is related to the multi-nationalisation of technology. This is a new world order that has become reliant on instantaneous digital communication and basic assumptions of a global village that has finally come to fruition. Today's capitalism is a flexible, borderless, global form of accumulation that has taken root to create a new economy. Capitalism continues to generate unacceptable forms of inequality and exploitation, to stimulate individual or private interest to the detriment of public or community provisions, and to contribute to the disorganisation of communities and the damage of the environment.

2.18.3.Postindustrial Society

According to Bell (1973), the term postindustrial society refers to changes in the sphere of production arising from developments in science and technology. Industrial societies are noted for their goods producing and employment of machine technology. Bell (1973) identified five changes in production: a shift in emphasis from goods production to service provision in the economic sector; an increase in health, education, research and development; growth in the numbers and influence of the professional and technical class; primacy of theoretical knowledge as a resource for innovation and policy; control in technology and technological advancement; and the creation of a new 'intellectual technology'.

In postindustrial society the labourer and artisan are replaced by the semi-skilled worker and the engineer. The new productive enterprises of postindustrial society derive from the increasing integration of science, technology and economics in research and development. New science-based fields that dominate the manufacturing sector of society include computers, electronics, optics and polymers. Work is transformed in terms of the type of workforce now required: there is a deskilling at the basic level of manufacturing, coupled with a growing requirement for professional workers with education and training to provide skills at the higher levels of design, development and implementation (Bell:

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1973). Aron (1967) states that working methods are dramatically changed in this new postindustrial workplace, where processes of production are being automated resulting in a large decline in employment in the primary and secondary sectors of production.

Smart (1992) agrees with the premise that more professional workers are required in the postindustrial workplace, but he also emphasises a devaluation of professionalism as technologically-skilled workers may not belong to any particular professional group or have specific qualifications. Hence there is a proletarianisation of the professional. Smart (1992) also states that technical and scientific occupational groups have experienced a deterioration in working conditions, such as longer working hours, greater job insecurity and risk of unemployment, and increases in fragmentation, specialisation, and bureaucratisation in the workplace.

Galbraith (1969) describes a shift in power that occurs in postindustrial societies, away from capital and towards a new factor of production, namely individuals of diverse technical knowledge, experience and talent. Associated with this shift is the emergence of highly specialised educational institutions where technological skills can be learned and updated. Smart (1992) states that increasing scientific specialisation and professionalism in the use of ever-changing technological tools and knowledge, such as hardware design or software coding, places individuals in a situation of dependency upon institutionally produced commodities and services. Smart (1992) contends that ultimately this produces a progressive homogenisation of persons and relationships, and an erosion of individual autonomy and creativity.

2.18.4 Truth As Subjective Construct

According to Cheney (1995), postmodernists have concluded that people's descriptions of reality differ to the extent that there is no independent reality and therefore no basis for making judgements about truth or falsity. Chaney (1995) states that postmodernists bombard us with the idea that there is no truth. From education to art to law postmodernists have waged an attack on truth. Cheney (1995) refers to Orwell's 1984 as an example of a world where objective truth is denied, where definitions become too 'slippery' and everything is open to interpretation, such as 'war is peace', and 'freedom is

slavery'. Truth has become a construct of whatever group is most dominant, irrespective of the lack of evidence or reasoned argument.

Cheney (1995) states that postmodernists have taken the whole notion of political correctness to a shocking extreme. Cheney (1995) cites examples of postmodernist thought that has run rampant: sexual harassment once meant unwanted fondling or sexual blackmail, but now it may be deemed to include disagreeing with a feminist professor or asking a female colleague how she spent the weekend. Cheney (1995) quotes feminists and critical race theorists who claim that legal principles represent white mail thinking, and demand that positive discrimination be enforced to give underprivileged and underrepresented groups greater power. Cheney (1995) states that in this new culture truth and reason are being replaced by a kind of distorted thinking that denies there is any truth. Evidence is no longer required to accuse a person of discrimination or unfair treatment. Employees can lose their jobs because their behaviour or attitude has been interpreted by a colleague as being subjectively insensitive.

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2.19.0 Conclusion

From a review of existing literature several key trends emerged. Much research has been conducted into the level of individualism that exists in the workplace in the west, especially in the US. The IT industry has been particularly marked as a white-collar non-unionised individualistic industry. Existing research states that collectivism and trade unionism is much more likely to exist in traditionally blue-collar unionised industries than in sectors such as IT which employs mainly professional highly skilled workers (Kochan and McKersie: 1986; Freedman: 1985; Goldfield: 1989; Kochan, Katz and McKersie: 1994; Watson: 1961; Aronson: 1985; Hyman: 1999; Bernstein: 1977; Jackson: 1997; McLoughlin and Gourley: 1994; Dunlop: 1988). Individualism is also a feature of the postmodern era, with its emphasis on technological advancement and ideas, and its lack of emphasis on people's inability to form close relationships (Smart: 1992) and promote quality of life. The postmodern world also espouses subjective truth and reality (Cheney: 1995), but this philosophy appears to be leading towards fragmentation, social complexity, specialisation and meaninglessness (Smart: 1992), and alienation, loss of identity, break-up of communities and social diversity (Macionis: 1999).

From existing literature it was noted that the IT industry developed in the US from the 1950s onwards and spread its 'Americanised values' and industrial relations policies globally. In Ireland the introduction of various government programmes in the 1980s successfully attracted American IT industries (Gallen: 2001). However, in contrast to the US, the development of the Irish IT industry in the 1990s has been aided by, among other factors, the trade union movement (Browne: 1995; Duffy: 2000).

With regard to gender in the IT industry, women tend to be employed in the less skilled and lowest paid sectors of production and clerical in IT firms (Webster: 1996; Rees, cited by Ducatel: 1994). In the area of professional development, the need for workers to continue to update their skills in order to avoid obsolescence is a real necessity (Kotter: 1995; Dublin: 1972; Cascio: 2000), as is their need to create a professional development plan in order to remain employable (Gould: 1972; Sheedy: 1976; Perez and Pino: 1992; Horibe: 1999; and Chan: 1992.). With regard to workers receiving at work, companies introduce training when it is for their own benefit in terms of increasing short-term profitability, but the days of investing in employees' career

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development has largely disappeared (Cross, Lynton, Nowlen and Stern: 1981; Broadwell and Sizeman-House: 1986). The importance for workers of making a personal development plan is also espoused (Broadwell and Sizeman-House: 1986; Handa: 1984; Cartwright et al; 1996).

With regard to hours worked, existing research states that Silicon Valley is synonymous with working long hours (Rogers and Larson : 1984; Hayes: 1989); while US workers routinely work more than eighteen hours a day (Cohen: 2002). Existing research on quality of life states that developing a balance is the key, where work, family, socialising, hobbies and spiritually are all included in ones life (Collard and Gelatt: 2000). In the IT industry, however, the boundary between work and life is generally thought to be blurred (Ramsay: 1999; Kanter: 1977), where family life is often viewed through the demands of work (English-Lueck: 2002). In the area of work-life balance, existing research also states that family and personal issues impinge a great deal on work (Bond, Galinsky and Swanberg: 1998; Johnson: 1999; Marks, Scholarios et al; 2001).

The literature reviewed also reported much worker dissatisfaction in the IT work environment in the US (Cusumano and Selby: 1996), with worker burnout regularly occurring due to pressure and long work hours required (Cohen:2000; Rogers and Larson: 1984; Kidder: 1981: Shapero: 1985).

The broad question in the thesis explores the level of professional and personal development and trade union membership of IT workers in the Republic of Ireland and the United States, and involves a comparative study of IT workers in both locations. Based on the key trends that have emerged from the literature review, the following areas were chosen for research in this thesis:

- gender division among workers
- level of education
- degree to which IT workers have a professional or personal development plan
- knowledge and skills level of IT workers
- how IT workers reskill
- level of training that IT workers receive from their employers
- level of membership of professional computer societies
- time spent at work

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- quality of work life
- level of work-life balance
- how IT workers perceive their work environment
- the extent to which IT workers' needs are met by current employment
- the length of employment favoured by IT workers
- level of trade union membership
- type and degree of worker representation
- level of staff association membership in trade union and non-trade union firms in the Republic of Ireland and in the United States.

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3.0.0 Research Objectives and Research Questions

3.1.0 Research Objectives

The objectives of the thesis are listed below. This thesis explores the professional and personal development and trade union membership of IT workers in the Republic of Ireland and the United States. In each of these areas a comparative study between IT workers in Dublin, Ireland, and IT workers in Silicon Valley, California, United States, has also been conducted.

- To establish the **division of gender** and the **level of eduation** of respondents
- To ascertain the degree to which respondents have **professional and personal development plans** in place.
- To establish the **knowledge and skills level** of respondents on graduating from college and when employed in the IT sector.
- To ascertain how IT workers **reskill** in order to keep up-to-date with rapidly changing technologies and to remain employable in a very competitive industry. Areas to be looked at here include **life-long learning** for both professional and personal development, receiving on the job training or mentoring at work, and self-learning through periodicals, journals or the Internet.
- To ascertain the **type and level of training that IT workers receive from their employers**. Possible training may involve in-house or on the job training, mentoring by fellow staff, or subsidised night courses.
- The level of **membership of professional societies** is also investigated.
- To ascertain the number of **hours per week that respondents spend at work**.

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- To ascertain the level of IT worker's **quality of work life**. The quality of work life of IT workers was determined by investigating findings in the areas of professional development, personal development and work environment.

- To investigate **work-life balance** of IT workers. The time that worker's spend at work, at leisure, with family, and socialising is ascertained. The number of hours worked per week by IT workers is also investigated. Also the importance that IT workers place on various aspects of life, including satisfying friendships, happy family life, financially comfortable, voluntary work in the community, is looked at. The needs met by IT worker's current employment are also investigated, including financial security, and sense of belonging. The importance that workers attribute to introducing work-life balance policies to their workplace, including the introduction of crèche facilities, telecommuting, job sharing, encouragement of further academic training, and paternity leave, is also ascertained.

- To investigate how IT workers perceive their **work environment**. This includes whether workers experience excessive levels of stress, or other work problems, such as workaholism or burnout. It investigates how workers describe their work environment, in terms of being stressful, team-orientated, supportive or competitive.

- To establish the needs that are met by current employement. These may include financial security, a sense of belonging, a feeling of contributing, and a sense of achievement.

- To establish the **length of time that workers have been in their current employment**, the time they spent in their last employment, and the optimum length of time in any employment is ascertained.

- To establish **trade union membership levels** amongst IT workers in the Republic of Ireland and the United States. Existing research states that the IT industry has largely remained union-free. The objectives of this thesis are to establish why unions globally

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have found it difficult to recruit members in such a lucrative, high-employment but also highly stressed and competitive area.

- To ascertain **the type and degree of worker representation** in the workplace for non-trade union workers in the IT sector.

- To ascertain the **level of staff association membership** in IT trade union and non-trade union firms.

3.2.0 Research Questions

The broad question addressed in the thesis is to establish the level of professional and personal development and trade union membership of IT workers in the Republic of Ireland and the United States. The individual questions to be addressed in the thesis are as follows:

1. To establish the degree of **gender division** among workers in the IT sector in the Republic of Ireland and the United States.

2. To establish the **level of education** of IT workers in the Republic of Ireland and the United States.

3. To ascertain the degree to which IT workers have a **professional development plan** in Republic of Ireland and the United States.

4. To ascertain the degree to which IT workers have a **personal development plan** in Republic of Ireland and the United States.

5. To ascertain the **knowledge and skills level** of IT workers in Republic of Ireland and the United States.

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6. To ascertain how IT workers **reskill** to remain current in the rapidly changing technological industry in the Republic of Ireland and the United States.

7. To ascertain the **level of training that IT workers receive from their employers** in the Republic of Ireland and the United States.

8. To establish the level of **membership of professional computer societies** of IT workers in the Republic of Ireland and the United States.

9. The research question under discussion sets out to investigate the **time spent at work** by IT workers in the Republic of Ireland and the United States.

10. To investigate the **level of quality of work life** for IT workers in the Republic of Ireland and the United States.

11. To investigate the **level of work-life balance** for IT workers in the Republic of Ireland and the United States.

12. To investigate how IT workers perceive their **work environment** in the Republic of Ireland and the United States.

13. To investigate the extent to which IT workers **needs are met by current employment** in the Republic of Ireland and the United States.

14. To ascertain the **length of employment** favoured by IT workers in the Republic of Ireland and the United States.

15. To establish **trade union membership levels** amongst IT workers in the Republic of Ireland and the United States.

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16. To ascertain the type and degree of **worker representation** in the workplace for non-trade union workers in the IT sector in the Republic of Ireland and the United States.

17. To ascertain the level of **staff association membership** in IT trade union and non-trade union firms in the Republic of Ireland and in the United States.

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4.0.0 Methodology

4.1.0 Introduction

The main framework of the methodology is the classical 'positivistic' design where data was gathered and statistics used to test research questions. Data was collected by survey instrument. To investigate trade unionism in the IT sector in unionised and non-unionised firms, a pilot study was conducted between June 1st and June 30th 2002. This consisted of two surveys and four questionnaires.

To investigate professional and personal development in the IT sector, a survey was conducted where identical questionnaires were sent to IT workers who worked in firms that were selected from two databases, one in Dublin, Ireland and the other in Silicon Valley, California, United States. The survey was conducted between January 24th 2003 and January 31st 2004.

4.2.0 Trade Union Pilot Surveys

The pilot study consisted of two surveys and was administered between June 1st 2002 and June 30th 2002. The first survey was administered in the form of two identical questionnaires. One questionnaire was sent to IT workers who worked in unionised firms in Dublin, Ireland. The second questionnaire was sent to IT workers who worked in unionised workers in Silicon Valley, California, United States. The second survey was administered in the form of two identical questionnaires. One questionnaire was sent to IT workers who worked in non-unionised firms in Dublin, Ireland. The second questionnaire was sent to IT workers who worked in non-unionised workers in Silicon Valley, California, United States.

4.2.1 Trade Union Pilot 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 **Appendix A: 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

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unionised survey was sent to a random sample of firms in Silicon Valley. **A list of trade union firms surveyed in both Dublin and Silicon Valley can be found in Appendix B.**

4.2.2 Trade Union Pilot 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 telephone number and email address of firms to survey. In Silicon Valley, the Valley Yellow Pages 2001, Computer section, was used to ascertain the telephone number and email addresses of firms to survey. **A list of non-union firms surveyed in both Dublin and Silicon Valley can be found in Appendix C: Trade Union Pilot Non-Unionised Surveys.**

4.3.0 Trade Union Questionnaire Format

Nineteen questions were posed on the union questionnaire, and eighteen questions 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

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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 survey began on June 1st 2002 and ended on June 30th 2002. Results were collected from the four email addresses that respondents were asked to use to submit responses. **Trade union pilot study questionnaires (for Dublin non-union, Dublin union, Silicon Valley union, and Silicon Valley non-union IT workers are contained in Appendix D).**

4.4.0 Professional and Personal Development Main Study

A comparative study was conducted to evaluate professional and personal development in the IT sector in Dublin, Ireland and Silicon Valley, California, United Sates. Data was collected by survey.

4.5.0 Sampling Frame

There were two databases used from which sample firms were selected randomly. The first database contained names of IT firms in Dublin, Ireland (as supplied by Mr. Seamus Gallen of the National Informatics Directorate, Dublin). The second database contained names of IT firms in Silicon Valley, California (as per the Silicon Valley Web Directory of computer and semiconductor companies in Silicon Valley, website: **http://mentorms.best.vwh.net/valley/s1_compi.htm**).

4.5.1 Silicon Valley: Boundaries

Thomas (1985) states that Silicon Valley occupies the area that is officially called Santa Clara Valley, in California. This area stretches from the Santa Cruz mountains and the San Francisco Bay, from Palo Alto, through Mountain View, Sunnyvale and Santa Clara, down to San Jose, and continues as far south as Gilroy. The main Californian counties

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that are included in the definition of Silicon Valley are Santa Clara County, San Mateo County, Alameda County, and San Francisco County. These four counties are defined as Silicon Valley in this thesis.

A list of the number of IT companies in each of these counties is given in the table below (Rich's High Tech Business Guide to Silicon Valley and Northern California: 2002), and also a list of population (US Census 2000).

Table 3. Silicon Valley Counties Showing Number of IT Companies and Population (Estimated) for 2002

Silicon Valley County	No. of IT Companies 2002	County Population 2002 (Estimated)
Alameda County	1,708	1,486,600
San Francisco County	789	793,600
Santa Clara County	3,860	1,719,600
San Mateo County	961	717,000
Total	7,318	4,716,800

4.5.2 Dublin: Boundaries

In this thesis Dublin refers to County Dublin, Ireland. According to the National Informatics Directorate in the Republic of Ireland, at the end of 2002, it is estimated that the Irish software industry consisted of more than 900 companies, 140 of them foreign, employing 28,000 people and exporting over €12bn worth of products and services (http://www.nsd.ie/htm/ssii/stat.htm). The software industry is concentrated mainly in the Dublin area. The population of County Dublin in 2002 was 1,122,821.

4.5.3 IT Employees Definition

Surveys were sent randomly to selected IT firms as per Dublin and Silicon Valley databases. For this survey IT firms surveyed are defined as firms involved in telecommunications, software or hardware development, semiconductor and networking. IT sales or manufacturing firms were not surveyed. IT Firms selected were asked to email surveys to their IT employees. Responses were then emailed directly to the researcher by IT employees.

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IT professionals surveyed can be grouped as per the following occupation definitions: Program manager, hardware/software engineer, developer/programmer, customer support/documentation.

4.6.0 Databases of IT Firms

The Dublin and Silicon Valley databases of IT firms are outlined below.

4.6.1 Dublin IT Firms Database

The database used to extract a sample of IT firms in Dublin for survey purposes was supplied by Mr. Seamus Gallen, of the National Informatics Directorate, in Dublin http://www.nsd.ie/htm/ssii/search_counties.php3?counties=Dublin). There are 634 Dublin IT companies listed in the nsd website.

Seamus Gallen stated that firms are selected for inclusion in the database of IT firms in the Republic of Ireland as follows. "Strictly, the firms are there based on the fact that we believe that they create original software, to some extent. We exclude people like PC dealers who just sell third party shrink wrapped software with their machines. However, it is difficult to be right all the time, and it may not be 100% what it is supposed to be. They are not members of anything, and most of them (in number terms) have no relationship with the industrial development agencies (EI, Udaras, SFADCO, and IDA). A lot of them are 1-man or 2-women outfits."

4.6.2 Silicon Valley IT Firms Database

This database contains names of IT firms in Silicon Valley, California (as per the Silicon Valley Web Directory of computer and semiconductor companies headquartered in Silicon Valley, website: http://mentorms.best.vwh.net/valley/s1_compi.htm). There are **1055** Silicon Valley IT companies listed in the Mentorms website.

According to the Mentorms website: "This directory lists the websites of over 2,100 computer and semicondutor companies' web sites from all over the world. The focus of the list is on major software and hardware manufacturers. This is the most comprehensive list on the internet. The directory is divided into three parts which include the following: Companies located in Silicon Valley which is defined as all companies

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within 100 miles of the San Francisco Bay. There are approximately 862 companies in this group. It includes all Internet Service Providers in the bay area as well as hardware, software, and semiconductor manufacturing or design companies. Companies located beyond Silicon Valley. This group currently includes about 1,221 companies. Major wholesale distributors of computer hardware and software. This group includes the 61 largest suppliers in the world. This list is updated daily with new additions. We go out of our way to find companies that are engaged in technologies related to the Internet and the world wide web."

4.7.0 Question Design

The questionnaire method was selected as way of survey instrument. The Likert scale (1934) was used to present IT workers in Dublin, Ireland and Silicon Valley, California, United States, with a set of statements that described a typical work environment. Subjects' level of agreement or disagreement with these statements was then used to measure their perception of their work environment.

4.8.0 Main Survey Administration

The survey was administered to Dublin and Silicon Valley IT companies randomly chosen from the above databases. The first survey began on January 24th 2003, the second round of surveys were administered on February 11th 2003 (in Dublin) and April 4th 2003 (in Silicon Valley), the third round of surveys began on August 2nd 2003, and the final survey began on January 10th 2004. It firms surveyed were asked to reply within a three-week period. The survey was administered by email. Where it was discovered that a company randomly selected was no longer trading or had moved location, the next company in the database list was chosen.

Two identical questionnaires were sent, one to Dublin IT firms, and the other to Silicon Valley IT firms. 'Dublin' and 'Silicon Valley' denoted the location of survey in the questionnaire header. It was expected that surveys would be returned within a two-week period. An email address was given where surveys were to be returned.

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4.8.1 Initial Survey

The outline of the first random survey that began on January 24th 2003 is given below: The National Informatics Directorate website (http://www.nsd.ie/htm/ssii/search_counties.php3?counties=Dublin) was used to randomly extract approximately 50 Dublin IT firms. There are 634 firms within County Dublin listed. Emails were sent to every twelfth firm on the database until 50 firms had been selected and the end of the database had been reached. In this case 52 firms were selected and surveyed.

The Silicon Valley Web Directory of computer and semiconductor companies headquartered in Silicon Valley, website: http://mentorms.best.vwh.net/valley/s1_compi.htm), was used to randomly extract approximately 50 Silicon Valley IT firms. There are 1063 Silicon Valley IT companies listed in the Mentorms website. Emails were sent to every twenty-second firm on the database until 50 firms had been selected and the end of the database had been reached. In this case 50 firms were selected and surveyed.

4.8.2 Second Survey

The next round of random surveys was conducted on the Dublin IT databases, beginning February 11th 2003. The same method as the initial survey was adopted. For the initial study every twelfth firm on the database was surveyed until 52 firms had been selected and the end of the database had been reached. In this case 634 firms were in the database, less 52 firms already surveyed, which left 582 firms yet to be surveyed. In order to randomly survey approximately a further 50 firms, every eleventh firm not previously surveyed was selected for survey. 56 firms were surveyed.

The second round of surveys sent to Silicon Valley firms began on April 4th 2003. For the initial study every twenty-second firm had been surveyed. There were a total of 1063 firms in the database, less 50 firms already surveyed, which left 1013 firms yet to be surveyed. In order to randomly survey a further 50 firms, every twentieth firm not previously surveyed was selected for survey. 53 firms were surveyed.

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4.8.3 Third Survey

The next round of random surveys was conducted on the Dublin database, beginning August 7th 2003. For the first and second surveys a total of 108 firms had been selected. In this case 634 firms in the database, less 108 firms already surveyed, left 526 firms yet to be surveyed. In order to randomly survey approximately a further 50 firms, every tenth firm not previously surveyed was selected for survey. 56 firms were surveyed.

The third round of Silicon Valley random surveys began on August 7th 2003. For the first and second surveys a total of 103 firms had been selected. There were a total of 1063 firms in the database, less 103 firms already surveyed, left 960 firms yet to be surveyed. In order to randomly survey a further 50 firms, every nineteenth firm not previously surveyed was selected for survey. 46 firms were surveyed.

Preliminary statistical trends were examined after the third stage of the survey. **Preliminary study questionnaires for Dublin and Silicon Valley IT workers are contained in Appendix E.** After an investigation of preliminary results questionnaires were amended where this was deemed to improve the overall quality of the survey.

4.8.4 Fourth Survey

The fourth and final round of random surveys was conducted on the Dublin database, beginning January 10th 2004 and ending on January 31st 2004. For the first, second and third surveys a total of 164 firms had been selected. In this case 634 firms in the database, less 164 firms already surveyed, left 470 firms yet to be surveyed. In order to randomly survey approximately a further 100 firms, every fifth firm not previously surveyed was selected for survey. 50 firms were surveyed. This brought the total of Dublin firms surveyed throughout the main study to 214 firms.

The fourth and final round of Silicon Valley random surveys began on January 10th 2004, and ended on January 31st 2004. For the first, second and third surveys a total of 149 firms had been selected. There were a total of 1063 firms in the database, less 149 firms already surveyed, left 914 firms yet to be surveyed. In order to randomly survey a further 100 firms, every ninth firm not previously surveyed was selected for survey. 92 firms were surveyed. This brought the total of Silicon Valley firms surveyed throughout

the main study to 241 firms. **Main study questionnaires for Dublin and Silicon Valley IT workers are contained in Appendix F.**

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5.0.0 Report Findings

5.1.0 Introduction

This section presents the findings of research undertaken for the trade union IT workers comparative pilot study conducted in Dublin, Ireland and Silicon Valley, California, USA. It also reports on the preliminary and main study findings of the professional and personal development comparative study of IT workers in Dublin, Ireland and in Silicon Valley, California, USA. Data collected in each study was statistically analysed using the SPSS Version 12.0 for Windows software package.

5.2.0 Results of Trade Union Pilot Study

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

The raw data collected in each pilot study has been reported in **Appendix G**. Data was received from IT workers for the following surveys:

1. Dublin, Ireland Non-union
2. Dublin, Ireland, Union
3. Silicon Valley, California, Non-union

No data was received for the Silicon Valley, California Union survey. Although data had been collected to enable a non-union IT workers comparative study to be undertaken, the absence of data from IT workers who were trade unions members in Silicon Valley, California, USA meant that a union comparative study could not be undertaken.

Analysis of results, comparing surveys undertaken in Silicon Valley, California, USA, and Dublin, Ireland, between unionised and non-unionised IT workers, were completed on the following surveys:

1. Silicon Valley Non-union and Dublin Non-union
2. Dublin Union and Dublin Non-union

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5.3.0 Analysis of Silicon Valley Non-union and Dublin Non-union Results Analysis

Analysis of results was conducted using SPSS Vesion 12.0 for Windows. To view statistics produced using SPSS please refer to **Appendix L: Silicon Valley Non-union and Dublin Non-union Statistical Analysis.**

5.3.1 Q1. Please tick your gender – male or female

In the area of gender, both Dublin and Silicon Valley categories produced a high level of male employees. 70.6 percent (12) of Dublin non-union respondents were male, and 29.4 percent (5) female. A slightly lower figure, 72.2 percent (13) of Silicon Valley non-union respondents were male, and 27.8 percent (5) female.

5.3.2 Q2. What is your job title?

In the Dublin non-union category, responses for 'Job Title' occurred as follows: Directors (1: Application Development Director), Managers (6: Project Manager (2 cases), Central Resource Manager, Program Manager, Line Manager, Training/Manager/Organiser/Deliverer – general dogs body), Senior position (1: Senior Technical Instructor), Engineer (2: Customer Support Engineer, Engineer), Consultants (2: Consultant, Telecoms Operation and Maintenance Consultant), Technical Writer (1), and others (2: Test Coordinator, IT Specialist). Two respondents did not complete this question. Senior Positions (including directors, managers, and seniors) accounted for 53.3% of Dublin respondents.

In the Silicon Valley non-union category responses for 'Job Title'occurred as follows. Managers (4: Product Testing, Training, Software, and Project), Senior Positions (2: Senior technical Writer (1), IT Press Officer (1), Technical Writer (8), Engineers (2), Consultant (1: Network consultant), Director (1). Senior Positions (including directors, and seniors) accounted for 38.8% of Silicon Valley respondents. This is lower than the figure recorded for Irish non-union senior positions (53.3%). Technical writers occur most frequently among Silicon Valley respondents. Managers occur frequently amongst both sets of respondents.

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5.3.3 Q3. What is your highest level of education? Primary, Secondary, Third Level (Cert), Third Level (Dip) Third Level (Degree), Other. If other please give details.

In the Dublin non-union category, responses for 'Education Level' occurred as follows: Primary (0), Secondary (0), Third Cert (2), Third Level Dip (0), Third Level Degrees (11), Other (4: MBA. Primary Masters in Electrical Engineering, PhD). Third level degrees and higher accounted for 82.2% of responses.

In the Silicon Valley non-union category, responses for 'Education Level' (Q3) occurred as follows: Primary (0), Secondary (0), Third Cert (0), Third Level Dip (0), Third Level Degrees (14), Graduate Degrees (4: Masters (2), PhD (2)). Third level degrees and higher accounted for 100% of responses, which was higher than that for Dublin non-union workers.

5.3.4 Q4: Is there a staff association in your organisation?

In the Dublin non-union category, responses for 'Membership of Staff Associations' were as follows: 11 employees replied that they were not members of a staff association, 4 said they were members, and 2 did not respond. This resulted in non-membership of staff associations at 64.7%, and membership at 23.5%. There was a non-response rate of 11.8%.

In the Silicon Valley non-union category, responses for 'Membership of Staff Associations' were as follows: 18 employees replied that they were not members of a staff association. This resulted in non-membership of staff associations at 100% for Silicon Valley respondents. Dublin Non-union respondents also show a high level of non-membership of staff associations (64.7%).

5.3.5 Q5. If yes [staff association organisation], please state any benefits that you derive from being a member of this association.

In the Dublin non-union category, responses for 'Benefits of Staff Association Membership' were as follows: Discounts (1), Payment for overtime (1), None (1). 14 employees (82.4%) did not respond to this question.

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In the Silicon Valley non-union category, there were no responses for 'Benefits of Staff Association Membership'. Both Irish union and non-union employees responded very poorly to this question.

5.3.6 Q6: If yes [to membership of Staff Association], does your association promote professional development in your organisation?

Dublin Non-union employees' responses for 'Staff Association Promoting Professional Development' were as follows: No (2), 'Not that I'm aware of (1). 14 employees (82.4%) did not respond.

No Silicon Valley non-union employee responded to this question. Both Dublin and Silicon Valley non-union employees therefore responded very poorly to the whole area of staff associations.

5.3.7 Q7. Are you a member of any professional computer organisation?

Dublin non-union employees responded to the question of whether they were membership of professional organisations as follows: No (13), Yes (2), and 2 employees did not respond. This result shows a major lack of membership (76.5%) of professional computer societies for the respondents.

Silicon Valley non-union employees responded to this question as follows: No (16), Yes (1), and one employee did not respond. This shows a major lack of membership (88.9%) of professional computer societies in California and (76.5%) in the Republic of Ireland.

5.3.8 Q8. If yes [professional computer organisation member] please give details.

Dublin non-union responses for 'details of membership of staff association' were as follows: IEEE (1), Macromedia Certified Instructor (1). 13 (76.5%) Employees did not respond.

Silicon Valley non-union employees did not respond to this question. Therefore there was a major lack of interest in professional computer societies in both Ireland (76.5%) and California (88.9%).

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5.3.9 Q9. Who would represent you if there were a problem at work?

In the Dublin non-union category, responses for 'who would represent you' contained multiple answers in five cases: Company (6), Myself (3), No one (2), Don't know (1), Union (1). Four employees did not respond. 6 respondents (35.3%) said the company would represent them if there were a problem at work. Workers who do not have union membership are very likely to seek representation in the case of a work problem from within the company (manager, HR/company, self, colleague). It is less likely for non-union IT workers to seek external representation (lawyer, union).

In the Silicon Valley non-union category, responses to the question of 'who would represent you' contained multiple answers in two cases: Myself (10), Company (2), Don't know (3), Noone (2), No response (1). 55.6% of Silicon Valley non-union respondents answered that they would represent themselves if there were a problem at work, compared to 17.6% of Irish non-union respondents. 2 (11.1%) of Silicon Valley respondents said their company would represent them, compared to 35.3% of Irish non-union respondents. This shows a greater belief in individual representation in Silicon Valley, and in company representation in Dublin among non-union IT workers.

5.3.10 Q10. Have you ever felt the need for external representation at work?

Dublin non-union responses for 'External representation' were as follows: No (14), yes (1). 2 Employees did not respond. This showed a major lack of interest (82.4%) in having external representative, such as union representation.

Silicon Valley non-union responses for this question were as follows: No (11), Yes (6). Referring to the bar chart above, both Dublin and Silicon Valley non-union respondents showed a high level of not needing external representation: Dublin (82.4%); Silicon Valley (61.1%). Silicon Valley workers however showed some interested in obtaining external representation (33.3%), compared to only 5.9% of Dublin non-union workers.

5.3.11 Q11. If yes, [felt the need for external representation] please give details.

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In the Dublin non-union category, only one response was received for 'details of external representation': 'The company gets a lot more from me than I do from them'. 94.1% (16) of Dublin IT employees did not respond to this question.

In the Silicon Valley non-union category, there were six responses received: 'In a few jobs I've had serious disagreements with managers that led to my termination. I could have done with representation but didn't chose to involve an attorney – too difficult to get anywhere and it can ruin your reputation'; 'The last job I worked in was particularly stressful. I was singled out feel unfairly by a manager and life became hell'; 'Problems with a new manager. I stepped down as project manager'; 'I would like to have someone outside of the firm who could represent me when problems occur'; 'Was being accused of sexual harassment, invasion of privacy, and had a hostile environment complaint lodged against me, all of no merit'; 'I've had bad times at work where I was forced out of several jobs. I just got another job'. 72.2% (13) of Silicon Valley IT employees did not respond to this question.

5.312 Q12a. How important is professional development to you: Are you a member of a professional body (please list in full)

In the Dublin non-union category, responses for this question were as follows: No (7), Membership of organisations stated (4), No response obtained (6). 41.2% of non-union respondents were not members of professional bodies. 23.5% of non-union respondents were members of professional bodies.

In the Silicon Valley Non-union category, responses for this question were as follows: No (17), Membership of organisations stated (1). 94.4% of Silicon Valley non-union respondents stated that they were not members of professional bodies, compared to 41.2% of Dublin non-unions respondents.

The crosstabulation table above displays similar data with that produced for Q. 7: Professional computer organisation membership. For both questions, 17 Silicon Valley respondents said they were not members, while 1 respondent answered yes. The Dublin responses obtained in each case differ however. Question 7 has 13 respondents answering 'no' to membership, while 1 person answers 'yes'. In Question 12a however, only 7 respondents answered 'no', while 4 answered 'yes', and 6 did not respond. Thus there is a

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discrepancy between responses to professional organisation membership among Dublin respondents.

5.3.13 Q12b. Are you undertaking (or plan to undertake) postgraduate study?

In the Dublin non-union category, responses for this question were as follows: No (8), Yes (4), Other (1), No response obtained (5). 47.1% of non-union respondents were not planning to undertake postgraduate study, while 23.5% planned to undertake postgraduate study.

In the Silicon Valley non-union category, responses for this question (Q13b) were as follows: No (16), Yes (1), Maybe (1). Only 5.6% of Californian non-union respondents planned to undertake further study compared to 47.1% of non-union respondents. 88.9% of Silicon Valley non-union respondents did not plan to undertake postgraduate study, compared to 23.5% of non-union respondents. From these results Dublin non-union respondents seem more inclined to undertake postgraduate study than Silicon Valley non-union respondents.

5.3.14 Q12c. Do you have a professional development plan?

In the Dublin non-union category, responses for this question were as follows: No (8), Yes (6), No response obtained (3). 47.1% of non-union respondents did not have a professional development plan, while 35.3% did have one.

In the Silicon Valley non-union category, responses for this question (Q13c) were as follows: No (12), Yes (6). 66.7% of Californian non-union members did not have a professional plan compared to 47.1% of Irish non-union respondents. From these results Dublin non-union respondents are more likely than Silicon Valley non-union respondents to have a professional development plan.

5.3.15 Q13a. How important is personal development to you: What are your regular hobbies/ pass-times?

In the Dublin non-union category responses obtained were as follows: Sport (7), Arts and Literature (5), Socialising (2), Home and Family (1), Keep Fit (1), Others (7), No response (6).

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In the Silicon Valley non-union category responses obtained were divided into these categories for analysis: Arts and Literature (11), Food and Cooking (6), Home and Family (5), Sport (4), Travel (7), Socialising (7), others (4).

From the above responses leisure pursuit seems to be more important with Silicon Valley non-union workers than with Dublin non-union workers, as 45 responses in total were received from Silicon Valley respondents, compared to 18 responses received from Dublin workers.

5.3.16 Q13b. What components (themes) would you include in a personal development plan?

In the Dublin non-union category, responses obtained were categorised as follows: Non-career courses (6), Work courses (2), and Leisure Pursuits (1).

In the Silicon Valley non-union category, multiple responses were given as follows: Leisure Pursuits (2). Non-responses were found in 8 cases (47.1%) in the Dublin survey, and in 16 cases (88.9%) in the Silicon Valley survey. This shows a very large disinterest in having a personal development plan in both areas, but most particularly in Silicon Valley.

5.3.17 Q14. Is your salary level comparable with that of other IT professionals in similar positions

For Irish non-union respondents the following replies were received: Yes (6), No (3), Don't Know (6). 2 employees did not respond. 35.3% stated that they thought their salaries were comparable with other IT professionals in similar positions.

Silicon Valley non-union respondents replied as follows: Yes (15), No (0). 3 respondents did not reply. 83.3% of Silicon Valley non-union respondents stated that they thought their salaries were comparable with other IT professionals in similar positions, compared with 35.3% of Dublin non-union respondents.

Q15. How many hours do you spend at work per week, taking an approximate average over the last three months? 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64+?

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In the Dublin non-union category, the following responses were given: 30-34 (4), 35-39 (3), 40-44 (8), 45-49 (1), 50-54 (1), and 55-59 (0). 40-44 hours worked per week as an average over three months occurs in 47.1% of non-union responses.

In the Silicon Valley non-union category, the following responses for hours worked per week, as an average over three months, were given: 30-34 (5), 35-39 (1), 40-44 (5), 45-49 (6), 50-54 (0), 55-59 (1), No Response (1). 40-44 hours worked as an average over three months occurs in 27.8 percent of Californian non-union responses, and 45-49 hours worked occurs in 33.3 percent of Silicon Valley cases.

In both Dublin and Silicon Valley, 40-44 hours were worked per week in 13 (33.3 percent) of all workers. However the hours most often worked by Silicon Valley workers were 45-49 (33.3 percent of Silicon valley respondents).

Table 4: Data and Statistics for Hours Worked by IT Workers in Dublin, Ireland and Silicon Valley, Califiornia for Non-union Firms

	30-34	35-39	40-44	45-49-	50-54-	55-59	Median	Mean	Standard Deviation
Dublin	4	3	8	1	1	0	2	2.833333	2.926887
Silicon Valley	5	1	6	0	0	1	1	2.166667	2.639444

Statistics for median, mean, and standard deviation are displayed above. Both the standard deviation figures show a high degree of dispersion from the mean.

5.3.18 Q16. How would you describe your work environment?

In the Dublin non-union category, a variety of responses were given, and in 7 cases multiple responses. The following categories have been devised for the purpose of analysis: Great (1), Good (6), Fair (4), Poor (1), Problematic (3). Words used to positively describe the work environment were 'pleasant', 'comfortable', 'fine', relaxed', 'people-orientated', 'informal', 'friendly and flexible', 'busy but interesting'. Problem areas mentioned included 'concerned for job future', 'economical issues hasn't helped in the last year', 'activity is either too busy or not busy at all', and 'a lot of pressure'.

In the Silicon Valley non-union category, multiple responses were received in 4cases. The following categories have been devised for the purpose of analysis: Great

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(2), Good (3), Fair (5), Poor (0), Problematic (8). Words used to positively describe the work environment were 'interesting product', 'very good work environment', 'get on well with management', 'great manager'. Problem areas mentioned included 'stressful' in 4 responses, 'pressurised' in 3 responses, 'only part-time work' in 2 responses, 'demanding' in 1 response, and 'tough deadlines' in 1 response.

According to this pilot study, work environment seems to be more problematic in Silicon Valley, as 8 (44.4%) of respondent's statements fell into this category, compared to 3 (17.6%) of Dublin respondents. Dublin respondents also reported more positive comments on their work environments, as 'Good' or 'Great' accounted for 7 (41.2%) of responses, compared with 5 (27.8 percent) of Silicon Valley workers who commented positively to work environment.

5.3.18 Q17. When did you last receive training at work for new skills that are required as part of your job? Never received Training, 0 to 3 months ago, 4 to 6 months ago, 7 to 9 months ago, 10 to 12 months ago, 13 to 15 months ago, 16 to 18 months ago, and 16+ months ago.

In the Dublin non-union category, the following responses were completed: 1-3 (4), 4-6 (3), 7-9 (3), 10-12 (2), 13-15 (2), 18+ (1), Never received training (1). 93.7% of non-union respondents had received training within the last 18 months.

In the Silicon Valley non-union category (Q16), the following responses were completed: 4-6 (3), 10-12 (1), 13-15 (1), Never received training (13). 72.2% of Silicon Valley non-union respondents received no training, compared to 6.3% of Irish non-union respondents. This implies that there is a serious lack of training in IT firms in Silicon Valley.

Table 5: Statistics for Training of IT Workers in Dublin and Silicon Valley for Non-union Firms

	Median	Mean	Standard Deviation
Dublin Non-union	2	1.888889	1.269296
Silicon Valley Non-union	0	2	4.242641

Statistics for Training of IT Workers in Dublin and Silicon Valley for Non-union Firms above shows a wide dispersion for training of IT workers in Silicon valley, and a mild dispersion for training of workers in Dublin.

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5.3.19 Q18. If you wish to pursue training or further qualifications is this funded by your organisation?

In the Dublin non-union category, respondents replied as followed: Yes (13), No (1), Don't know (1), No response (2). 76.5% of non-union respondents stated that funding would be made available by their organisation to pay for further qualifications.

In the Silicon Valley non-union category (Q17) respondents replied as followed: Yes (6), No (6), Don't know (6). 33.3% of Silicon Valley non-union respondents stated that funding would be made available by their organisation to pay for further qualifications, compared with 76.5% of non-union respondents. This implies that funding for further study is much more likely in for IT employees in Dublin than in Silicon Valley.

5.4.0 Analysis of Dublin Union and Dublin Non-Union Results

Analysis of results was conducted using SPSS Version 12.0 for Windows. To view statistics produced using SPSS please refer to **Appendix M: Dublin Union and Dublin Non-union Statistical Analysis.**

5.4.1 Q1. Please tick your gender – male or female.

In the area of gender, both Dublin categories produced a high level of male employees. 85.7% (12) of union respondents were male, and 14.3% (2) female. A slightly lower figure, 70.6% (12) of non-union respondents were male, and 29.4% (5) female.

5.4.2 Q2. What is your job title?

In the Dublin non-union category, responses for 'Job Title' occurred as follows: Directors (1: Application Development Director), Managers (5: Project Manager, Central Resource Manager, Program Manager, Line Manager, Training/Manager/Organiser/Deliverer – general dogs body), Senior position (1: Senior Technical Instructor), Engineer (2: Customer Support Engineer, Engineer), Programmer (1), Technical Writer (1), Consultants (2: Consultant, Telecoms Operation and Maintenance Consultant) and others (2: Test Coordinator, IT Specialist). Two respondents did not complete this question.

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Senior Positions (including directors, managers, and seniors) accounted for 41.2% of all non-union respondents' job titles.

In the Dublin union category responses for 'Job Title' (Q2) occurred as follows. Managers (4: IT HelpDesk Manager, IT Manager Payroll/HR, Head of IT, Team Leader), Senior Positions (1: Senior Analyst/Programmer), Technical Writer (7), Programmer (1). Senior Positions (including directors, managers, and seniors) accounted for 42.8% of all union respondents' job titles. This is a similar figure to that recorded for non-union senior positions (441.2%).

5.4.3 Q3. What is your highest level of education? Primary, Secondary, Third Level (Cert), Third Level (Dip) Third Level (Degree), Other. If other please give details.

In the Dublin non-union category, responses for 'Education Level' occurred as follows: Secondary (0), Third Cert (2), Third Level Dip (0), Third Level Degrees (11), Post Graduate (3: MBA, Primary Masters in Electrical Engineering, PhD). Third level degrees and higher accounted for 87.6% of responses.

In the Dublin union category, responses for 'Education Level' (Q3) occurred as follows: Primary (0), Secondary (1), Third Cert (1), Third Level Dip (4), Third Level Degrees (5), Post Graduate (1, Graduate Diploma). In two cases there was no response. Third level degrees and higher accounted for 50% of responses, which was much less than that for non-union firms (87.6%).

5.4.4 Q4. Is there a staff association in your organisation?

In the Dublin non-union category, responses for 'Membership of Staff Associations' were as follows: 11 employees replied that they were not members of a staff association, 4 said they were members, and 2 did not respond. This resulted in non-membership of staff associations at 64.7%, and membership at 23.5%.

In the Dublin union category, responses for 'Membership of Staff Associations' (Q9) were as follows: 7 employees replied that they were not members of a staff association, 5 said they were members, and 2 did not respond. This resulted in non-membership of staff associations at 50%, and membership at 35.7%.

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Both categories therefore showed low levels of staff association membership, with non-union membership at 23.5%, and union membership at 35.7%.

5.4.5 Q5. If yes [staff association organisation], please state any benefits that you derive from being a member of this association.

In the Dublin non-union category, responses for 'Benefits of Staff Association Membership' were as follows: No Benefits (2), Benefits (1). 14 employees (82.4%) did not respond to this question.

In the Dublin union category, responses for 'Benefits of Staff Association Membership' (Q10) were as follows: No Benefits (1), Benefits (1). 12 employees (85.7%) did not respond to this question. Both Dublin union and non-union employees responded very poorly to this question.

5.4.6 Q9. Who would represent you if there were a problem at work?

In the Dublin non-union category, responses for 'who would represent you' were as follows: Company (6), Myself (3), No one (2), Union (1), Don't know (1). 4 employees did not respond. Referring to the above cross tabulation and bar chart, workers who do not have union membership are very likely to seek representation in the case of a work problem from within the company (manager, HR/company, self, colleague), with 35.3% of non-union workers responding positively to company representation. It is less likely for non-union IT workers to seek external representation (lawyer, union), with only 5.9% of non-union workers responding positively to union representation.

In the Dublin union category, responses to the question of 'who would represent you' (Q11) were as follows: Union (8), Myself (5), Don't know (1). All respondents answered this question. Union members are much more likely to look for representation from their union in the case of a work problem than from any other source (57.1% of union respondents). No union member responded that the company would represent them, unlike 6 (35.3%) of non-union respondents who stated that the company would represent them if there were problems at work. The second choice of union members is self-representation (35.7%) if a problem arises.

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5.4.7 Q12a. How important is professional development to you: Are you a member of a professional body (please list in full)

In the Dublin non-union category, responses for this question were as follows: No Membership (7), Yes Membership (4), No response obtained (6). 41.2% of non-union respondents were not members of professional bodies. 23.5% of non-union respondents were members of professional bodies.

In the Dublin union category, responses for this question (Q13a) were as follows: No Membership (12), Yes Membership (1), No response obtained (1). 85.7% of union respondents were not members of professional bodies, compared to 41.2% of non-unions respondents. Only 7.1% of union respondents were members of professional bodies compared to 23.5% of non-union respondents. This implies that there is a very low level of professional organisation membership in both Dublin non-union and union sectors, and that non-membership is very high (85.7%) among union respondents.

5.4.8 Q12b. Are you undertaking (or plan to undertake) postgraduate study?

In the Dublin non-union category, responses for this question were as follows: No (8), Yes (4), No response obtained (5). 47.1% of non-union respondents were not planning to undertake postgraduate study, while 23.5% planned to undertake postgraduate study.

In the Dublin union category, responses for this question (Q13b) were as follows: No (9), Yes (5). 64.3% of union respondents did not plan to undertake further study compared with 47.1% of non-union respondents. From these results both Dublin union and non union respondents are more inclined not to undertake post graduate study, though union respondents (35.7%) are more in favour of undertaking postgraduate study than non-union respondents (23.5%).

5.4.9 Q12c. Do you have a professional development plan?

In the Dublin non-union category, responses for whether or not workers had a professional development plan were as follows: No (8), Yes (6), No response obtained (3). 47.1% of non-union respondents did not have a professional development plan, while 35.3% did have one.

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In the Dublin union category, responses for this question (Q13c) were as follows: Yes (8), No (5), No response (1). 57.1% of union members did have a professional plan compared to 35.3% of non-union respondents. From these results union respondents are more likely than non-union respondents to have a professional development plan.

5.4.10 Q13a. How important is personal development to you: What are your regular hobbies/ pass-times?

For Dublin non-union, responses were as follows: Sport (7), Arts and Literature (5), Keep Fit (1), Home and family (1), Socialising (2) Other (1), No response (6).

In the Dublin union category, (Q14a), responses were as follows: Sport (8), Arts and Literature (5), Socialising (3), Keep Fit (2), Home and Family (1), Other (2), No response (2). In both non-union and union categories, sport, and arts and literature, feature prominently as hobbies pursued by respondents.

5.4.11 Q13b. What components (themes) would you include in a personal development plan?

In the Dublin non-union category responses were as follows: Non-career courses (6), Work-related courses (1), Leisure Pursuits (1), Don't Know (1). Eight non-union workers did not respond to this question.

In the Dublin union category (Q14b) responses were as follows: Work-related courses (7), Non-career courses (3), Leisure Pursuits (1), Don't Know (1). Two union workers did not respond to this question. From the results it seems that non-union workers are more likely to concentrate on non-career courses (35.3%) as part of their personal development plan, whereas union workers are more likely to focus on work-related courses (50%).

5.4.12 Q15. How many hours do you spend at work per week, taking an approximate average over the last three months? 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64+?

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In the Dublin non-union category, the following responses were given: 30-34 (4), 35-39 (3), 40-44 (8), 45-49 (1), 50-55 (1). 40-44 hours worked as an average over three months occurs in 47.1% of non-union responses.

In the Dublin union category, the following responses were given (Q12): 30-34 (1), 35-39 (2), 40-44 (5), 45-49 (3), 50-54 (1), No Response (2). 40-44 hours worked as an average over three months occurs in 35.7% of union responses. In both Dublin union and non-union, the 40-44 hour range was the most frequently worked: for non-union respondents (47.1%), and for union respondents (35.7%).

Table 6: Data and Statistics for Hours Worked by IT Workers in Dublin, Ireland for Non-union and Union Firms

	30-34	35-39	40-44	45-49-	50-54-	55-59	Other	No Response	Median	Mean	Standard Deviation
Non-Union	4	3	8	1	1	0	0	0	1	2.125	2.799
Union	1	1	5	2	1	0	1	3	1	1.75	1.581

Statistics for median, mean, and standard deviation are displayed above. The deviation for Non-union (2.799) is much greater than for union (1.581).

5.4.13 Q16. How would you describe your work environment?

In the Dublin non-union category, a variety of responses were given. The following categories have been devised for the purpose of analysis: Great (1), Good (7), Fair (3), Problematic (3), Poor (1). Two workers did not respond to this question. Words used to positively describe the work environment were 'pleasant', 'comfortable' 'fine', relaxed', 'people-orientated', 'informal', 'friendly and flexible', 'busy but interesting'. Problem areas mentioned included 'concerned for job future', 'economical issues hasn't helped in the last year', 'activity is either too busy or not busy at all', and 'a lot of pressure'.

In the Dublin union category the same categories were used for the purpose of analysis: Great (1), Good (5), Fair (6), Problematic (2). Words used to positively describe the work environment were 'pleasant', 'relaxed', team oriented', 'technically rewarding', 'informal', 'good working environment', 'good communication with my sponsor'. Problem areas mentioned included 'stressful' in two responses, 'technical area demands constant supervision', and 'a little short of space'.

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Overall, 'Good' was the most popular category for both Dublin non-union (41.2%) and Dublin union respondents (35.7%) to describe their work environment.

5.4.14 Q17. When did you last receive training at work for new skills that are required as part of your job? Never received Training, 0 to 3 months ago, 4 to 6 months ago, 7 to 9 months ago, 10 to 12 months ago, 13 to 15 months ago, 16 to 18 months ago, and 18+ months ago.

In the Dublin non-union category, the following responses were completed: 1-3 (4), 4-6 (3), 7-9 (3), 10-12 (2), 13-15 (2), 16-18 (0), 19-21 (1), Never received training (1). 87.4% of non-union respondents had received training within the last 15 months.

In the Dublin union category (Q16), the following responses were completed: 1-3 (7), 4-6 (3), 13-15 (1), 16-18 (1). 91.7% of union respondents received training within the last 15 months. Both Dublin non-union and union figures for receiving training within the last 15 months are very high: non-union (87.4%), and union (91.7%).

Table 7: Statistics for Training of IT Workers in Dublin Union and Dublin Non-Union Firms

	Median	Mean	Standard Deviation
Dublin Non-union	2	1.888889	0
Dublin Union	1	1.444444	2.297341

Statistics for Training of IT Workers in Dublin Union and Dublin Non-union Firms show a normal curve for the training of Dublin non-union IT workers, while a mild dispersion of data is shown for the training of IT workers in Dublin union firms.

5.4.15 Q18. If you wish to pursue training or further qualifications is this funded by your organisation?

In the Dublin non-union category, respondents replied as followed: Yes (13), No (1), Don't Know (1), No response (1). 76.5% of non-union respondents stated that funding would be made available by their organisation to pay for further qualifications.

In the Dublin union category (Q17) respondents replied as followed: Yes (12), No (1), Don't Know (1). 85.7% of union respondents stated that funding would be made available by their organisation to pay for further qualifications. Thus funding is available to a large extent in both Dublin non-union and union firms: non-union (76.5%), and union (85.7%).

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5.5.0 Union Survey Analysis

As data was not received from the Silicon Valley, California, USA union survey, no analysis could be undertaken to compare the following surveys:

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

5.6.0 Change in Direction of Research

The pilot study was undertaken as part of the original proposed study: an evaluation of trade union membership in the information technology (IT) Sector in the Republic of Ireland and the United States. Several companies that were known to have partial union involvement were contacted in Silicon Valley and asked to allow their employees to take part in the pilot survey. No response was received from any IT union member in Silicon Valley. Therefore it was not possible to draw a comparison between IT workers who were union members in Silicon Valley, and between IT workers who were union members in Dublin and Silicon Valley.

The non-union policy of many IT companies in the US has been well researched (Gender Jackson (1997), McLoughlin and Gourley (1994), Dunlop (1988). Therefore the failure to locate IT unionised companies in Silicon Valley to take part in the trade union pilot study is in line with existing research which has frequently documented the lack of union membership in the IT sector.

5.6.1 New Direction of Research

The failure to garnish any data for IT union firms in Silicon Valley, determined that it was therefore not feasible to pursue the investigation of unionisation in IT firms. It was decided to change the direction of the research to focus on professional and personal development, and the quality of work life of IT workers in Dublin, Ireland and in Silicon Valley, California.

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5.7.0 Analysis of Preliminary Results for Comparative Study Of Professional and Personal Development of IT Workers

This section gives an analysis of the preliminary results that were collated from IT workers responses in Dublin Ireland, and Silicon Valley, Californina. SPSS Version 12.0 for Windows was used to exact statistics from raw survey data.

Survey responses can be viewed in Appendix H:

1. Preliminary Results of Professional and Personal Development Study for IT Workers in Dublin, Ireland
2. Preliminary Results of Professional and Personal Development Study for IT Workers in Silicon Valley, California, USA

Statistics generated and the full analysis of data that was conduced can be viewed in: **Appendix N: Analysis of Preliminary Results for Professional and Personal Comparative Study of IT Workers in Dublin Ireland, and Silicon valley, Californina, USA**

5.8.0 Introduction

A preliminary survey of randomly selected IT firms in Dublin and Silicon Valley produced a sample size of 37. Results for professional development indicate that there is low membership of both professional computer societies and staff associations. Respondents in both locations reported a high percentage of new skills being acquired through on the job training and though mentoring by fellow staff, while Dublin respondents report that they received a greater degree of training within a 24-month period than Silicon Valley respondents. Personal development results indicate that Dublin respondents spend more hours each month on leisure pursuits and with family, while Silicon Valley respondents spend longer hours at work. However, both Dublin and Silicon Valley respondents assigned the highest level of importance to having a happy family life and a compatible relationship. With regard to work environment, the majority of respondents from both locations described it as stressful, team-orientated, competitive, pressurized, supportive, flexible and appreciative.

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5.9.0 Summary of Preliminary Results

A summary of preliminary results for the comparative study for professional and personal development of IT workers is given below.

5.9.1.General Data

With regard to **gender**, both Silicon Valley (80 percent) and Dublin (72.7 percent) of respondents report a large majority of male IT workers. **Job descriptions** were more evenly dispersed among Dublin respondents, compared to Silicon Valley respondents. **Level of education** of respondents was largely at degree level, with Dublin respondents reporting that 66.7 percent have at least a third level degree, while Silicon Valley reported that 86.7 percent had a degree or higher qualification.

5.9.2 Professional Development

In terms of professional development, preliminary results indicate that there is a great deal of variation in the knowledge skill base of workers in both locations. There was also a large variety in the level of new skills reported by respondents, the largest being strategic analysis (400 percent skill level reported by a Dublin respondent), and the smallest being routing (50 percent skill level reported by a Silicon Valley respondent). New skills that respondents wished to train in included networks, new programming languages and tools, management information systems, architecture, and operating systems.

Membership of both professional computer societies and staff associations was found to be very low for respondents in both Dublin and Silicon Valley (combined total in both locations of non membership is 81.1 per cent). There was a very poor response to the questions on whether benefits were received from staff associations, and whether professional development was promoted by staff associations.

Respondents in both locations reported a high percentage of new skills being acquired through **on the job training** (63.6 per cent by Dublin respondents, and 46.7 percent by Silicon Valley respondents. Results for proposing to reskill in emerging topics

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indicate that respondents most frequently report **personal research** (45.9 per cent of total respondents).

With regard to **receiving training at work**, Dublin respondents report that they had received a greater degree of training within a 24-month period (81.9 per cent) than Silicon Valley respondents (66.7 percent). Results for the method of training favoured by employers to help employees acquire new skills was reported as being **mentoring by fellow staff** (40.5 per cent of total respondents).

5.9.3 Personal development

With regard to the **importance of various aspects of life**, both Dublin and Silicon Valley respondents assigned a high level of importance to aspects of life in the home: a happy family life and compatible relationship. For Silicon Valley respondents work aspects of life also received high levels of importance (financial security and successful work life), while for Dublin respondents leisure aspects of life received higher levels of importance (satisfying friendships and fulfilling pursuits).

With regard to **time spent on hobbies and socialising, leisure pursuits, and with family**, results indicate that Dublin respondents spend more hours each month than Silicon Valley respondents. In contrast, results **for time spent at work** indicate that the majority of Dublin respondents (63.6 percent) work between 140 and 160 hours per month, while the majority of Silicon Valley respondents (66.6 percent) report a higher number of hours spent working per month of between 150 and 200 hours. With regard to **time spent on academic pursuits,** results show quite a high percentage of Dublin (36.4 percent) and Silicon Valley respondents (40 percent) who reported that they spent no time on academic pursuits per month.

With regard to the **need most met by current employment**, Dublin respondents chose a sense of belonging (mean: 54.09) while Silicon Valley respondents chose financial security (mean: 63.3). Dublin workers report that the importance of introducing **work-life balance policies** to their workplace is high, whereas Silicon Valley workers report that introducing **telecommuting** to the workplace is of high importance. Introducing **unpaid leave during family crisis** was reported to be of high importance by both sets of respondents.

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5.9.4 Work Environment

Responses to the question of **representation if there was a problem at work** varied greatly between both locations, although the majority in both cases favoured self-representation. Survey recipients were also asked to **describe their work environment**. The majority of respondents from both locations described their work environment as stressful, team-orientated, competitive, pressurized, supportive, flexible and appreciative. The majority of respondents from both locations reported that their work environment did not promote work-life balance or creativity. Silicon Valley respondents also described work as authoritative, critical, and people-orientated, while Dublin respondents described workplace as being relaxed and having good core values.

Results for **length of time in current employment** indicate Dublin respondents (with a mean of 5.9 years) are employed for longer periods of time compared to Silicon Valley respondents (with a mean of 3.76 years employed). Results for **length of time in last employment** indicate that Dublin respondents (with a mean of 2.30 years) were employed for longer periods of time in their last employment compared to Silicon Valley respondents (with a mean of 1.73 years employed). Results for the **optimum length of time in employment** indicate that both Dublin respondents (with a mean of 4.82 years) and Silicon Valley respondents (with a mean of 5.13 years employed), prefer length of employment to be at least 3 years and less than 6 years.

Results for **hours worked per week** indicate that a large percentage of both Silicon Valley and Dublin respondents tend to work more than a 40 hour week. However, a greater percentage of Silicon Valley respondents tend to work more than forty hours per week (73.4 percent) compared to Dublin respondents (50 percent).

5.10.0 Conclusions of Preliminary Results Analysis

From an inspection of preliminary main study results and analysis, it was decided that the following changes would need to be made to survey questions. The questions pertaining to **staff association membership**, benefits of staff association membership, and whether professional development was promoted by staff associations (numbers 14, 15, and 16) will be deleted from the survey due to the extremely low level of staff association

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membership which was received from both Dublin and Silicon Valley employees surveyed. 16 Dublin respondents (72.7 percent), and 12 Silicon Valley respondents (80 percent) reported that they were not members of any staff association.

Question 5, which asked respondents to list **new emerging topics that they recently gained skills or knowledge in,** has been modified to reflect the responses received in the preliminary study. This question will now be divided into two sections in the final study, with the first section listing emerging topics and requiring that respondents state the relevance of each topic to their current work. The second section asks respondents to list any topics that they wish to reskill in that have not already been mentioned.

Question 7b: How do you propose to reskill in emerging topics, **has been modified to include options that reflect the responses received in the preliminary study. Question 7c:** In your opinion which are the most important topic areas in which to reskill, **has been deleted from the survey as responses received in the preliminary study were duplicates of those received for question 5.**

Question 17: **Who would represent you if there were a problem at work**, has been changed to question 14, and has also been modified to include options that reflect the responses received in the preliminary study.

Question 19a: **How long have you been in your current employment?**, question 19b: **How long were you in your last employment?,** and question 19c: **What is the optimum time you consider to be in employment in any firm?**, have been changed to questions 16a, b and c. They have also been modified to include options that reflect the responses received in the preliminary study.

5.10.2 Lessons Learned from Preliminary Survey

For the preliminary survey contact was made with the firms randomly selected from the Dublin and Silicon Valley databases mainly by email, and in some cases by telephone. The response rate of surveys received from IT employees in these firms was very low. 320 firms were contacted, and only 37 individual responses were received. One of the main lessons learned from the preliminary survey is that many firms do not wish to take part in this survey. Most firms ignored the request to take part, while several firms

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responded by stating they did not wish to be part of the survey due to the time it would take to administer the questionnaire to IT employees. Therefore it is expected that there will be a low response rate to the final survey.

5.10.3 Confidence Interval

The formula used to calculate the confidence interval (95%), where the following are known: M (the mean), ^{s}M (standard deviation divided by the square root of the sample size), and z (1.96), is as follows:

$M - z\,^{s}M \leq \square \leq M + z\,^{s}M$.

Each question in the survey is examined in terms of the observed precision level to ascertain an acceptable degree of precision in terms of the confidence interval (95 percent level). A sample size is then estimated from each confidence interval by using the above equation. The overall sample size required for the final study will be derived from a further examination of the estimated sample sizes.

Table 8. Estimated Sample Size for Main Study Preliminary Results

Question Number	Question Subject	M (Mean)	^{s}M (Std. Dev.)	Observed Percision	Acceptable Precision	Acceptable Confidence Interval	Estimated Sample Size
1	Gender	–	–		–	–	–
2	Current position	2.62	1.21	+ or - .39	+ or - .2	2.42 to 2.82	141
3	Education Level	4.86	1.15	+ or - .37	+ or - .2	4.66 to 5.06	127
4	Knowledge skill base: Algorithms and Data Structures	92.03	91.11	+ or – 29.37	+ or - 15	77.03 to 107.03	142
4	Architecture	93.92	78.05	+ or – 25.16	+ or –12	81.92 to 105.92	163
4	Artificial Intelligence & Robotics	39.36	53.52	+ or – 17.25	+ or –10	29.36 to 49.36	110
4	Database & Information Retrieval	113.65	91.40	+ or – 29.46	+ or –15	98.65 to 128.65	143
4	Human Computer Interaction	75.41	79.02	+ or – 25.47	+ or –12	63.41 to 87.41	167
4	Numerical & Symbolical Computing	56.57	57.29	+ or – 18.47	+ or –10	46.57 to 66.57	126
4	Operating Systems	118.24	80.62	+ or – 25.99	+ or – 15	103.24 to 133.24	111
4	Programming	127.62	95.2	+ or –	+ or –18	109.62 to	108

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Question Number	Question Subject	M (Mean)	^{s}M (Std. Dev.)	Observed Percision	Acceptable Precision	Acceptable Confidence Interval	Estimated Sample Size
	Languages			30.69		145.62	
4	Software Methodology/Engineering	105.81	92.25	+ or – 29.74	+ or –16	89.81 to 121.81	128
4	Networks	132.97	81.41	+ or – 26.24	+ or –14	118.97 to 146.97	130
4	Logic	95.41	74.78	+ or – 30.76	+ or –18	77.41 to 113.41	108
4	Discrete Mathematics	47.46	52.37	+ or - 16.88	+ or –9	38.46 to 56.46	130
4	Automata Theory	31.49	50.38	+ or - 16.24	+ or –9	22.49 to 40.49	120
4	Cryptography	57.22	67.01	+ or - 21.6	+ or –11	46.22 to 68.22	143
4	Physics	53.38	91.42	+ or – 29.46	+ or –15	38.38 to 68.38	143
4	Electronics	64.86	59.20	+ or – 19.08	+ or –12	52.86 to 76.86	94
4	Control Theory	32.23	49.43	+ or – 15.93	+ or –8	24.23 to 40.23	147
4	Communications Hardware	90.81	77.14	+ or - 24.87	+ or –13	77.81 to 103.81	135
4	Management Information Systems	97.59	65.01	+ or – 20.96	+ or –11	86.59 to 108.59	134
4	Decision Support Systems	64.50	69.18	+ or – 22.3	+ or –12	52.5 to 76.50	128
4	Business Subjects	90.0	103.6	+ or – 33.4	+ or –17	73 to 107	142
4	Numerical Analysis	62.22	73.30	+ or – 23.62	+ or –13	49.22 to 75.22	122
4	Statistics	61.17	62.28	+ or - 20.26	+ or –12	49.17 to 73.17	105
4	Operations Research	48.46	55.32	+ or – 17.83	+ or –10	38.46 to 58.46	117
4	Signal Processing	35.29	53.23	+ or – 17.16	+ or –10	25.29 to 45.29	109
4	Computational Linguistics	35.06	47.38	+ or – 15.27	+ or –8	27.06 to 43.06	135
4	Machine Translation	39.39	42.65	+ or – 13.75	+ or - 7	32.39 to 46.39	143
5	New Skills	–	–	+ or	–	–	–
6	Member of professional computer organisation	–	–	+ or	–	–	–
7a	How skills are currently acquired	1.84	.99	+ or - .32	+ or - .2	1.64 to 2.04	95
7b	How skills in emerging topics	2.11	1.20	+ or - .39	+ or - .2	1.91 to 2.31	141

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Question Number	Question Subject	M (Mean)	^{s}M (Std. Dev.)	Observed Percision	Acceptable Precision	Acceptable Confidence Interval	Estimated Sample Size
	are acquired						
7c	Most important topics to reskill in	–	–	–	–	–	–
8	Training was last received	3.46	2.56	+ or - .83	+ or - .5	2.96 to 3.96	102
9	How employer helps to acquire new skills	2.22	.95	+ or - .31	+ or - .2	2.02 to 2.42	89
10	Aspects of Life: Successful work life	3.88	1.24	+ or - .40	+ or - .2	3.68 to 4.08	148
10	Happy family life	4.72	.61	+ or - .2	+ or - .1	4.52 to 4.92	148
10	Fulfilling leisure pursuits	3.71	1.00	+ or .32	+ or -.2	3.51 to 3.91	95
10	Satisfying friendships	3.88	.88	+ or .28	+ or -.15	3.73 to 4.03	129
10	Varied social life	3.05	1.07	+ or .35	+ or -.2	2.85 to 3.25	113
10	Early retirement	3.28	1.18	+ or .38	+ or -.25	3.03 to 3.53	85
10	Personal fulfilment through hobbies	3.28	1.24	+ or - .40	+ or -.2	3.08 to 3.48	148
10	Life-long learning	3.54	1.18	+ or - .38	+ or -.25	3.29 to 3.79	85
10	Children's academic success	2.58	1.71	+ or - .55	+ or -.3	2.28 to 2.88	124
10	Compatible relationship	4.44	.90	+ or - .29	+ or -.15	4.29 to 4.59	138
10	Good prospects of promotion at work	2.97	1.46	+ or - .47	+ or -.3	2.67 to 3.27	91
10	Financially comfortable	4.20	.94	+ or - .3	+ or -.15	3.90 to 4.50	148
10	Voluntary work in the community	2.20	1.29	+ or - .42	+ or -.2	2.00 to 2.40	163
11	Hours spent at various activities: Hobbies, leisure, socializing	44.62	35.24	+ or – 11.36	+ or - 5	39.62 to 49.62	191
11	Family time	48.43	51.50	+ or – 16.60	+ or - 8	40.43 to 56.43	159
11	Fulfilling leisure pursuits	23.11	18.55	+ or – 5.98	+ or - 3	20.11 to 26.11	147
11	Training or academic pursuits	10.78	12.87	+ or – 4.15	+ or – 2.5	8.28 to 13.28	102

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Question Number	Question Subject	M (Mean)	^{s}M (Std. Dev.)	Observed Percision	Acceptable Precision	Acceptable Confidence Interval	Estimated Sample Size
11	Work	161.05	55.54	+ or – 17.89	+ or - 9	152.05 to 170.05	146
12	Needs met by employment: Financial security	57.43	27.48	+ or – 8.86	+ or - 5	52.43 to 62.43	116
12	Sense of belonging	51.49	26.92	+ or – 8.68	+ or - 5	46.49 to 56.49	112
12	Feeling of contributing	50.68	24.21	+ or – 7.8	+ or – 4	46.68 to 54.68	141
12	Sense of achievement	46.84	22.75	+ or – 7.33	+ or - 4	42.84 to 50.84	124
13	Importance of introducing the following to the workplace: crèche facilities	2.32	1.83	+ or - .59	+ or - .3	2.02 to 2.62	142
13	Promotion of work-life balance	3.32	1.51	+ or - .49	+ or - .25	3.17 to 3.57	142
13	Encouragement of further academic training	2.84	1.54	+ or - .46	+ or - .25	2.59 to 3.09	125
13	Promotion based on seniority	1.38	1.42	+ or - .46	+ or - .25	1.13 to 1.63	125
13	Telecommuting	2.53	1.22	+ or - .39	+ or - .2	2.33 to 2.73	141
13	Job Sharing	2.05	1.75	+ or - .56	+ or - .25	1.80 to 2.30	186
13	Extended maternity leave	2.24	1.85	+ or - .60	+ or - .3	1.94 to 2.54	148
13	Paternity leave	2.65	1.69	+ or - .55	+ or - .3	2.35 to 2.95	124
13	Funded counselling	2.19	1.54	+ or - .46	+ or - .25	1.94 to 2.44	125
13	Unpaid leave option during family crisis	3.68	1.13	+ or - .36	+ or - .2	3.48 to 3.88	120
14	Staff association in organisation	–	–	–	–	–	–
15	Benefits of staff association	5.05	1.75	+ or - .56	+ or - .25	4.80 to 5.30	186
16	If staff association promotes professional development	–	–	–	–	–	–
17	Work representation	3.19	2.48	+ or - .8	+ or - .4	279 to 3.59	148
18	Stressful	–	–	–	–	–	–
18	Relaxed	–	–	–	–	–	–
18	Team-orientated	–	–	–	–	–	–
18	Competitive	–	–	–	–	–	–

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Question Number	Question Subject	M (Mean)	^{s}M (Std. Dev.)	Observed Percision	Acceptable Precision	Acceptable Confidence Interval	Estimated Sample Size
18	Good core values	–	–	–	–	–	–
18	Promotes creativity	–	–	–	–	–	–
18	Authoritative	–	–	–	–	–	–
18	Pressurised	–	–	–	–	–	–
18	Promotes work-life balance	–	–	–	–	–	–
18	Critical	–	–	–	–	–	–
18	Supportive	–	–	–	–	–	–
18	Flexible	–	–	–	–	–	–
18	People-orientated	–	–	–	–	–	–
18	Appreciative	–	–	–	–	–	–
19a	Time in current employment	5.31	5.69	+ or – 1.83	+ or – .9	4.41 to 6.21	152
19b	Time in last employment	2.05	2.42	+ or - .78	+ or - .4	1.65 to 2.45	141
19c	Optimum time to be employed	4.49	4.54	+ or – 1.46	+ or – .7	3.79 to 5.19	155
20	Number of hours spent at work per week	40.46	10.55	+ or – 3.4	+ or - 2	38.46 to 42.46	107

5.10.4 Sample Size

The above table shows the estimated sample sizes for all survey questions. The range of sample sizes calculated is between 91 and 191. The largest estimated sample size of 191 is therefore taken as an acceptable indicator of sample size requirements for the remainder of the main study survey.

5.11.0 Analysis of Comparative Study Of Professional and Personal Development of IT Workers (Main Study)

This section gives an analysis of the main study results that were collated from IT workers responses in Dublin Ireland, and Silicon Valley, Californina. SPSS Version 12.0 for Windows was used to exact statistics from raw survey data.

Survey responses can be viewed in **Appendix I:**

1. Results of Main Study of Professional and Personal Development of IT Workers in Dublin, Ireland

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2. Results of Main Study of Professional and Personal Development of IT Workers in Dublin, Ireland

Statistics generated from data using SPSS Version 12.0 for Windows can be viewed in: **Appendix O: Analysis of Main Study Results for Professional and Personal Comparative Study of IT Workers in Dublin Ireland, and Silicon Valley, Californina, USA**

5.11.1 Question 1. Please tick your gender. Male or Female

Both Silicon Valley and Dublin respondents report a large majority of male IT workers. Silicon Valley respondents report 80 percent males, and 20 percent females. Dublin respondents report 67.6 percent males, and 32.4 percent females. Thus females are reported as being very underrepresented among IT respondents in both locations.

5.11.2 Question 2. Which of the following best describes your current position? (Program Manager, Hardware/Software Engineer, Developer/Programmer, Customer Support/Documentation).

Job descriptions are more evenly dispersed among Dublin respondents, compared to Silicon Valley respondents. Dublin respondents report 32.4 per cent of Hardware and software engineers, 26.5 per cent of project mangers, 17.6 per cent of developers/programmers, and 23.5 per cent of customer support/documentation.

Silicon Valley respondents present a very different picture, with a majority of 45 per cent of customer support/documentation, 35 per cent of project managers, and then only 10 per cent of hardware and software engineers, and 10 per cent of developers/programmers.

5.11.3 Question 3. What is your highest level of education? Primary, Secondary/High School, Third Level Cert, Third Level Dip, Third Level Degree, Post Graduate. If other please give details.

In terms of level of education, Silicon Valley respondents reported the highest level of workers with post-graduate qualifications (45%), followed by a high level of degrees (40%). Third level diplomas accounted for just 5 percent of workers' qualifications, and third level certificates accounted for a further 10 percent. No response for secondary/high

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school level of education was reported. Overall, 85 per cent reported having at least a third level degree qualification.

Dublin respondents reported the highest level of degrees (33.3 per cent), followed by post graduate qualifications (30.3 per cent), third level certificates (18.2 per cent), third level diplomas (12.1 per cent), and secondary/high school (6.1 per cent). Overall, 63.6 percent of Dublin respondents reported having at least a third level degree qualification, compared with a higher level of 85 per cent of Silicon Valley respondents.

5.11.4 Question 4. Taking your knowledge/skill base on graduation as 100%, please indicate what is your current knowledge/skill level in each subject listed? (A value of more than 100% indicates new knowledge/skills acquired, while a value of less than 100% indicates that part of your knowledge acquired is not relevant to your professional work).

Skill/Knowledge Area	%	Skill/Knowledge Area	%
Algorithms & Data Structures		Physics	
Architecture		Electronics	
Artificial Intelligence & Robotics		Control Theory	
Database & Information Retrieval		Communications Hardware	
Human Computer Interaction		Management Information Systems	
Numerical & Symbolical Computing		Decision Support Systems	
Operating Systems		Business Subjects	
Programming Languages		Numerical Analysis	
Software Methodology/Engineering		Statistics	
Networks		Operations Research	
Logic		Signal Processing	
Discrete Mathematics		Computational Linguistics	
Automata Theory		Machine Translation	
Cryptography			

Table 9: Table Showing Standard Deviation, Mean, and Median, and Variance for Skill/Knowledge area (combined Dublin and Silicon Valley frequencies) for Final Results for Main Study

Skill/Knowledge	Standard Deviation	Mean	Median	Variance
Algorithms and Data Structures	84.49	79.44	80	7139.31
Architecture	76.29	68.33	50	5819.81
Artificial Intelligence & Robotics	48.73	29.02	0	2374.66
Database & Information Retrieval	85.35	102.96	100	7284.04
Human Computer Interaction	73.46	64.81	55	5396.19
Numerical & Symbolical Computing	53.25	39.62	10	2835.14
Operating Systems	83.35	96.94	100	6949.62
Programming Languages	89.31	110.52	105	7975.95
Software Methodology/Engineering	84.66	95.83	100	7167.69
Networks	81.15	113.33	120	6584.91
Logic	73.59	74.54	90	5415.35
Discrete Mathematics	48.56	32.52	0	2357.99
Automata Theory	43.83	22.15	0	1921.23
Cryptography	62.35	43.28	0	3887.53
Physics I	78.89	38.52	2.50	6223.24
Electronics	57.41	48.02	40	3296.48
Control Theory	43.06	22.27	0	1853.85
Communications Hardware	75.01	77.96	100	5626.90
Management Information Systems	64.46	84.65	100	4155.21
Decision Support Systems	64.12	51.26	20	4111.43
Business Subjects	95.53	74.07	50	9126.48
Numerical Analysis	68.87	52.88	35	4743.48
Statistics	59.62	49.66	50	3554.77
Operations Research	51.15	36.69	7.50	2613.24
Signal Processing	49.27	28.56	0	2427.78
Computational Linguistics	41.83	24.37	0	1750.16
Machine Translation	39.61	26.75	0	1569.07

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From the above table, high levels of standard deviation (from 39.61 to 95.53) occur in the 27 responses to the skills/knowledge question, with standard deviation of greater than 50 occurring in 20 of these cases. Thus data is not clustered near to the mean and in many cases data can be found at the extremities. A large level of variance is also discernible in each of the 27 cases.

This question measured the current level of knowledge or skill of Silicon Valley and Dublin respondents for each skill listed, taking an initial level of 100% for each skill at graduation. An analysis of the responses received, particularly the standard deviation and variance figures in all cases, indicate a very large level of variance between current skill levels of respondents in Silicon Valley, California, and Dublin, Ireland. (Variance in all 27 cases is very high, between 1,569.07 and 9,126.48).

A breakdown of the statistics for each skill/knowledge area is given below, along with histograms showing standard deviation and data distribution.

5.11.5 Question 5a. In relations to the following topics, how do you rate their relevance to your current work?

Skill/Knowledge Area	%	Skill/Knowledge Area	%
Hardware Interfaces		Telecoms	
Strategic Analysis		Distributed Systems	
Requirements Analysis		Transmissions Systems	
Financing		Routing	
Video Editing/Compression		New Programming Languages	
Intelligent Networks		Project Management	
Mobile Networks		Messaging	
Fixed Networks		Technical Documentation	
Web Design		Help Systems	

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Table 10: Table showing Statistics for Skills/Knowledge area used in the workplace (combined Dublin and Silicon Valley frequencies) for Final Results for Main Study

Skill/Knowledge	Standard Deviation	Mean	Median	Variance
Hardware Interfaces	29.96	10.74	0	897.55
Strategic Analysis	28.38	10.56	0	805.35
Requirements Analysis	33.05	14.07	0	1092.52
Financing	25.23	8.33	0	636.79
Video Editing/Compression	16.07	3.89	0	258.18
Intelligent Networks	22.98	6.04	0	528.23
Mobile Networks	37.77	14.62	0	1426.78
Fixed Networks	36.37	14.54	0	1322.89
Web Design	34.07	10.74	0	1160.76
Telecoms	46.09	19.63	0	2124.39
Distributed Systems	30.21	10.74	0	912.65
Transmissions Systems	13.96	2.26	0	194.78
Routing	35.24	12.59	0	1242.21
New Programming Languages	33.85	14.44	0	1145.91
Project Management	44.09	23.06	0	1943.79
Messaging	27.65	6.94	0	764.54
Technical Documentation	42.13	20.56	0	1775.16
Help Systems	29.00	10.46	0	840.82

The list of skills/knowledge in the table above were derived from skills that IT workers reported they used as part of their work in the preliminary results of the main study. From the table above, the median is 0 in all cases. The mean figure in each case is also very low (from 3.89 to 23.06). The level of variance is quite high in each case (over 528 in 16 out of 18 cases. Thus data is not clustered near to the mean and in many cases data can be found at the extremities. The results derived from both question 4 (IT skills learned at college) and question 5 (IT skills used in the workplace) imply that the skills that IT workers use in their work varies enormously and does not follow a set pattern.

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5.11.6. Question 5b. Please add any additional topics not previously mentioned that you wish to reskill in.

Skill/Knowledge Area	%	Skill/Knowledge Area	%

Table 11: Case Summary of New Skills Knowledge for Final Results for Main Study

Place where survey was carried out	New Skill/Knowledge	% Skill Level
Silicon Valley	Network Security	150

This question asked respondents to report on any new skills that they would like to reskill in. Only one response was received for this question: Network security by a Silicon Valley worker.

5.11.7 Question 6. Are you a member of any professional organisation. Yes No.

The results show that professional computer organisation membership is very low among both Dublin and Silicon Valley respondents. In Silicon Valley, 5 respondents (25 percent) reported that they were members of a professional organisation. However, 15 Silicon Valley respondents (75 percent) reported that they were not members of any professional computer societies. In Dublin, 3 respondents (8.8 percent) reported that they were members. However, 31 Dublin respondents (91.2 percent) reported that they were not members of any professional computer organisation.

Although Silicon Valley respondents reported a higher percentage of professional computer organisation membership (25 per cent) than Dublin respondents (8.8 per cent), there is a very large majority of respondents in both locations (85.2 per cent in total) who are not members of any computer organisation.

5.11.8 Question 7a. How do you currently acquire new skills? On the job training, night courses, personal reading/research

Respondents in both locations reported a high percentage of new skills being acquired through on the job training: 25 Dublin respondents reported that they received on the job

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training (73.5 per cent), while 11 Silicon Valley respondents reported receiving on the job training (55 per cent). Personal reading/research was reported by 9 Dublin respondents (26.5 per cent) and 8 Silicon Valley respondents (40 per cent). Only 1 Silicon Valley respondent (5 per cent) and no Dublin respondent reported receiving training for new skills through night courses.

Thus, results for acquiring new skills indicates that respondents most frequently report on the job training (66.7 per cent of total respondents), followed by personal reading and research (31.5 per cent of total respondents). Night courses are not a common method of acquiring skills for respondents from either location (1.9 per cent of total respondents).

5.11.9 Question 7b. How do you propose to reskill in emerging topics? On the job training, Personal research, Night Courses.

A large percentage of Silicon Valley respondents did not answer this question (30 percent), compared to just 2.9 per cent of Dublin respondents. Respondents in both locations reported a high percentage for reskilling in new emerging topics through personal research: 13 Dublin respondents (38.2 per cent), and 8 Silicon Valley respondents (40 per cent). In the case of reskilling through on-the-job training, 16 Dublin respondents (47.1 per cent) reported that they proposed to reskill through this method of, while 2 Silicon Valley respondent (10 per cent) proposed to reskill through on the job training. With regard to reskilling through night courses: 4 Dublin respondents (11.8 per cent), and 4 Silicon Valley respondents (20 per cent) proposed to reskill in this way.

Thus, results for proposing to reskill in emerging topics indicate that respondents most frequently report personal research (38.9 per cent of total respondents). In both locations respondents showed only minimal interest in reskill through night courses (14.8 per cent of total respondents). The biggest difference between both groups in terms of reskilling was in the case of on-the-job training, where Silicon Valley respondents showed little interest in this (10 per cent), while Dublin respondents showed a keen interest (33.3 per cent).

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5.11.10 Question 8. When did you last receive training for new skills that are required as part of your job? Never received training, 1 to 3 months, 4 to 6 months, 7 to 9 months, 10 to 12 months, 13 to 15 months, 16 to 18 months, 19 to 21 months, 22 to 24 months.

Employees surveyed in both locations gave a high response level to the question of when they last received training. Only 1 Dublin employee and 1 Silicon Valley employee did not give any response. The highest Silicon Valley response for having received training within 4 to 6 months was reported by 8 respondents (40 percent). However 5 Silicon Valley respondents (25 percent) said they had never received training. Overall 14 (70 percent) of Silicon Valley respondents reported having received training within a 24-month period.

The highest Dublin response was for having received training within 1 to 3 months (11 respondents, 32.4 percent), followed by 4 respondents (11.8 percent) who received training within 4 to 6 months. However, 4 Dublin respondents (11.8 per cent) reported that they had never received training. Overall 29 respondents (86.3 percent) reported having received training within a 24-month period.

From the above results Dublin respondents report that they have received a greater degree of training within a 24-month period (86.3 per cent) than Silicon Valley respondents (70 percent).

5.11.11 Question 9. How does your employer help you to acquire new skills? By funding external courses, by providing on the job training, through mentoring by fellow staff

Respondents in both locations reported a high percentage of new skills being acquired through mentoring my fellow staff: 14 Dublin respondents (41.2 per cent) and 8 Silicon Valley respondents (40.0 per cent) reported receiving mentoring by fellow staff. Funding of external courses was reported by 12 Dublin respondents (35.3 per cent) and 6 Silicon Valley respondents (30.0 per cent). On the job training was reported by 6 Dublin respondents (17.6 per cent) and 5 Silicon Valley respondents (25.0 per cent).

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Thus, results for employers helping respondents to acquire new skills indicates that mentoring by fellow staff (40.7 per cent of total respondents) is the preferred choice of employer training in both locations. This is followed by funding of external course (33.3 per cent of total respondents), and by on the job training (20.4 per cent of total respondents).

5.11.12 Question 10. On a scale of 0 to 5 (with 0 being of no importance and 5 being of great importance), please indicate the importance that you would place on the following aspects of your life.

Aspects of Life	0-5 Scale
Successful work life	
Happy family life	
Fulfilling leisure pursuits	
Satisfying friendships	
Varied social life	
Early retirement	
Personal fulfilment through hobbies	
Life-long learning	
Children's academic success	
Compatible relationship	
Good prospects of promotion at work	
Financially comfortable	
Voluntary work in the community	

5.11.13 Activities

The activities in question four can be divided into three groups: work, home, and leisure. The groups with their allotted activities are arranged as follows:

Work: Successful work life, early retirement, good prospects of promotion at work, financially comfortable.

Home: Happy family life, children's academic success, compatible relationship.

Leisure: Fulfilling leisure pursuits, satisifying friendships, varied social life, personal fulfillment through hobbies, life-long learning, voluntary work in the community.

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Some activities may fit into two or more groups, such as life-long learning may be appropriate for both work and leisure; early retirement may impinge on work, home, leisure, and community, as more time is freed up to become involved in other pursuits.

5.11.14 Frequencies for Aspects of Life

Silicon Valley respondents reported that being financially comfortable was the most important aspect of life (mean was 4.575). This was followed by compatible relationship (mean was 4.525), happy family life (mean was 4.450), successful work life (mean was 4.350). Dublin respondents chose three of the same four aspects of life as Silicon Valley as being most important. The highest Dublin aspect of life reported was happy family life (mean of 4.7353), followed by compatible relationship (4.3235), satisfying friendships (4.1618), and financially comfortable (3.8824).

Silicon Valley respondents assigned medium importance to satisfying friendships (mean of 3.725), followed by life-long learning (mean of 3.45), fulfilling leisure pursuits (mean of 3.437), and early retirement (3.35). Dublin respondents assigned medium importance to varied social life (mean of 3.8088), followed by life-long learning (mean of 3.6471), personal fulfillment through hobbies (mean of 3.5147), and successful work life (mean of 3.5).

Respondents from both locations assigned low level of importance to children's academic success (Dublin mean: 2.72; Silicon Valley mean: 2.275). Voluntary work in the community was assigned the lowest rate of importance by respondents from both locations (Dublin mean: 2.72; Silicon Valley mean: 1.4).

For Silicon Valley respondents successful work life was more important (mean: 4.35) than it was for Dublin respondents (mean: 3.5). Also Silicon Valley respondents gave higher importance to being financially comfortable (mean: 4.57) than Dublin respondents (mean: 3.882). Dublin respondents reported that happy family life (mean of 4.735) was of greater importance than it was to Silicon Valley respondents (mean of 4.45), and that satisfying friendships (mean: 4.16) was of greater importance compared to Silicon Valley respondents (mean: 3.72).

Overall, Silicon Valley respondents assigned a high level of importance to work aspects of life: financially comfortable and successful work life, but also to aspects of life

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in the home: compatible relationship, and happy family life. For Dublin respondents aspects of life in the home were highest: happy family life and compatible relationship, followed by leisure: satisfying friendships, and then by work aspects of life: financially comfortable.

5.11.15 Correlations for Aspects of Life

Correlations, both positive and negative, for aspects of life are shown below.

5.11.16 Positive Correlations

With regard to positive correlations, it is interesting to note that the majority of the activities that are positively correlated belong to the same group. This can be seen in the following cases:

Work group: Successful work life is positively correlated good prospects of promotion at work (r=.674, p<.005), and financially comfortable (r=.677, p<.005). Good prospects of promotion at work is positively correlated with financially comfortable (r=.619, p<.005).

Home group: Happy family life is positively correlated with children's academic success (r=.359, p<.001), and compatible relationship (r=.308, p<.001).

Leisure Group: Fulfilling leisure pursuits is positively correlated with satisfying friendships ((r=.627, p<.005), with varied social life (r=.602, p<.005), with personal fulfillment through hobbies (r=.543, p<.005), with voluntary work in the community (r=.363, p<.005). Satisfying friendships is positively correlated with varied social life (r=.642, p<.005), with personal fulfillment through hobbies (r=.405, p<.001), and with life-long learning (r=.344, p<.001), and with voluntary work in the community (r=.383, p<.001). Varied social life is positively correlated with personal fulfillment through hobbies (r=.310, p<.001). Life-long learning is positively correlated with fulfilling leisure pursuits (r=.270, p<.001), and with voluntary work in the community (r=.384, p<.001).

Positive correlations that do not belong to the same group are as follows:

Happy family life (home) with good prospects of promotion at work (work), (r=.271, p<.001). Fulfilling leisure pursuits (leisure) with compatible relationship (home), (r=.330, p<.001). Life-long learning (leisure) and compatible relationship (home), (r=.415, p<.001). Children's academic success (home) and good prospects of promotion at work

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(work), (r=.450, p<.005). The lack of positive correlation between the groups of work and home is particularly striking.

5.11.17 Results of Positive Correlations

Results indicate that the greatest positive correlations occur between aspects of life of the same group, whether work, home, or leisure. There is also some positive correlation that occurs between aspects of life in the groups of leisure and home (two positive correlations noted). Two positive correlations were found to occur between aspects of life in the groups of home and work.

5.11.18 Negative Correlations

With regard to negative correlations, it is interesting to note that in all cases, aspects of life that are negatively correlated do not belong to the same group. This can be seen in the following cases:

Successful work life (work) is negatively correlated with fulfilling leisure pursuits (leisure), (r= -.322, p<.001), with satisfying friendships (leisure), (r= -.275, p<.001), and personal fulfilment through hobbies (leisure), (r= -.392, p<.005).

Varied social life (leisure) is negatively correlated with children's academic success (home), (r= -.273, p<.001).

Personal fulfilment through hobbies (leisure) is negatively correlated with good prospects of promotion at work (work), (r= -.283, p<.001).

5.11.19 Results of Negative Correlations

Aspects of life were negatively correlated in five cases: work with leisure in four cases, and leisure with home in one case. These results imply that certain aspects of life pertaining to work, and others pertaining to leisure, negatively affect the pursuit of each other.

5.11.20 Differences in Correlations Between Silicon Valley and Dublin

Major differences between correlations of aspects of life for Dublin and Silicon Valley correlations were found in just one case. This is listed below:

Varied social life (leisure) and good prospects of promotion at work (work): combined r= -.127; Dublin r=.119; Silicon Valley, r= -.480, p<.001. This combined correlation without

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significance shows a negative correlation of 99 percent significance for Silicon Valley, and a positive correlation without significance for Dublin.

5.11.21 Question 11. In the last month, please indicate the approximate number of hours spent on each of the following:

Activities	Hours
Hobbies/Leisuretime/Socialising	
Family time	
Fulfilling leisure pursuits	
Training or academic pursuits	
Work	

Table 12: Frequencies for time spent at various activities: Combined Dublin and Silicon Valley Main Study Final Results

Location	Activity	Mean	Median	Mode	Std. Dev.	Variance	Range	Minimum	Maximum
Dublin	Hobbies	42.18	38	50	35.38	1251.60	200	0	200
Silicon Valley	Hobbies	34.10	30	20	22.39	501.36	75	5	80
Dublin	Family Time	53.74	45	10	43.72	1911.35	160	0	160
Silicon Valley	Family Time	48.95	10	0	70.79	5011.52	240	0	240
Dublin	Fulfilling Leisure Pursuits	18.97	15.50	10	14.53	211.06	50	0	50
Silicon Valley	Fulfilling Leisure Pursuits	18	10	10	21.67	469.47	80	0	80
Dublin	Training Academic Pursuits	13.38	6.5	0	23.03	530.43	120	0	120
Silicon Valley	Training/ Academic Pursuits	10.25	10	0	17.66	34.78	80	0	80
Dublin	Work	160.65	160	160	25.59	614.72	140	100	240
Silicon Valley	Work	167.75	180	200	72.74	5290.72	320	0	320

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5.11.22 Hours Spent on Hobbies/Leisuretime/Socialising

Data for hours spent at various activities per month for hobbies/leisuretime/socialising showed a large variation in responses, especially from Dublin respondents. Variance was 1251.60 and standard deviation was 35.38. The range of Dublin replies was between 0 and 200 hours per month. The largest group of Dublin respondents (6: 17.6 per cent) reported that they spent 50 hours each month on hobbies/leisuretime/socialising. 5 Dublin respondents (14.7 percent) reported spending 30 hours each month on hobbies, while 4 (11.8 percent) respondents reported spending 40 hours on hobbies. The most common range of hours reported to be spent on hobbies, occurred within the 30 to 60 hour period, reported by 21 (61.7 per cent) of Dublin respondents.

In Silicon Valley, there was less variation in reply. Variance was 501.36, and standard deviation was 35.38. The range of hours spent on hobbies was from 0 to 200 hours per month. The largest two groups of Silicon Valley respondents (4, 20.0 per cent) reported that they spent 40 hours each month on hobbies/leisuretime/socialising. 3 Silicon Valley respondents (20 percent) reported spending 20 hours and 40 hours each month on hobbies, while 3 (15 percent) respondents reported spending 30 hours on hobbies. The most common range of hours reported to be spent on hobbies, occurred within the 20 to 40 hour period, reported by 13 Silicon Valley respondents (60 per cent). This compares with 61.7 per cent of Dublin respondents spending between 30 and 60 hours each month on hobbies. Looking at the mean, Silicon Valley's mean is 34.1 and Dublin's mean is 42.18 for time spent on hobbies. Results therefore indicate that Dublin respondents spend more hours on hobbies each month than Silicon Valley respondents.

5.11.23 Hours Spent at Family Time

Data for hours spent at various activities per month for family time showed a large variation in responses for both Dublin and Silicon Valley respondents. In Dublin variance was 1911.35 and standard deviation was 43.72. The range of Dublin replies was from 0 to 160 hours per month. The largest groups of Dublin respondents (4, 11.8 per cent) reported that they spent 30, 50 and 60 hours each month on family time. 3 Dublin respondents (8.8 percent) reported spending 20 hours each month on family, while a further 3 (8.8 percent) respondents reported spending 100 hours on family. The most

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common range of hours reported to be spent on family time, occurred within the 10 to 60 hour period, reported by 23 (67.7 per cent) of Dublin respondents.

In Silicon Valley there was an immense variation in replies for hours spent on family time, ranging from 0 to 240 hours per month. Variance was 5011.52, and standard deviation was 70.79. The largest groups of Silicon Valley respondents (5, 25.0 per cent) reported that they spent 0 hours and 10 hours each month with family. A further 4 Silicon Valley respondents (20 per cent) reported spending 50 hours with family per month. The most common range of hours reported to be spent on family, occurred within the 0 to 10 hour period, reported by 11 (55 per cent) of Silicon Valley respondents. This compares with 67.7 per cent of Dublin respondents spending between 10 and 60 hours each month on family time. Looking at the mean, Silicon Valley's mean is 48.95, and Dublin's mean is 53.74 for time spent with family. Results therefore indicate that Dublin respondents spend more hours with family each month than Silicon Valley respondents.

5.11.24 Hours Spent at Fulfilling Leisure Pursuits

For Dublin respondents, data reported for hours spent at various activities per month for fulfilling leisure pursuits was within the range 0 to 50 hours. Variance was 211.06, and standard deviation was 14.53. The largest group of Dublin respondents (7: 20.6 per cent) reported that they spent 30 hours each month on leisure pursuits. 5 Dublin respondents (14.7 percent) reported spending 0 hours each month, while groups of 4 respondents (11.8 percent in each case) reported spending 20, 30, and 40 hours on leisure pursuits. The most common range of hours reported being spent on leisure pursuits, occurred within the 10 to 40 hour period, reported by 25 Dublin respondents (73.6 per cent).

In Silicon Valley data reported for hours spent at various activities per month for fulfilling leisure pursuits was within the range 0 to 80 hours. Variance was much less than with Dublin responses at 469.47, and standard deviation was 21.67. The largest group of Silicon Valley respondents (9: 45 per cent) reported that they spent 10 hours each month on leisure pursuits. Two groups of 4 Silicon Valley respondents (20 percent) reported spending 0 and 20 hours on leisure pursuits per month. The most common range of hours reported to be spent on leisure pursuits, occurred within the 0 to 20 hour period, reported by 17 (85 per cent) of Silicon Valley respondents. This compares with 73.6 per

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cent of Dublin respondents spending between 10 and 40 hours each month on leisure pursuits. Looking at the mean, Silicon Valley's mean is 10 and Dublin's mean is 15.5 for time spent on leisure pursuits. Results indicate that Dublin respondents spend more hours on leisure pursuits each month than Silicon Valley respondents.

5.11.25 Hours Spent at Training or Academic Pursuits

For Dublin respondents, data reported for hours spent at various activities per month for training or academic pursuits was within the range 0 to 120 hours. Variance was 530.43, and standard deviation was 23.03. The largest group of Dublin respondents (14: 41.2 per cent) reported that they spent 0 hours each month on academic pursuits. 5 Dublin respondents (14.7 percent) reported spending 10 hours each month in academic pursuits. The most common range of hours reported for academic pursuits, occurred within the 0 to 10 hour period, reported by 24 Dublin respondents (70.6 per cent).

In Silicon Valley data reported for hours spent at various activities per month for training and academic pursuits was within the range 0 to 10 hours. Variance was quite low at 34.78, and standard deviation was 17.66 per cent. Two groups of Silicon Valley respondents (8: 40 per cent) reported that they spent 0 hours, and 10 hours each month on academics. The most common range of hours reported to be spent on training and academic pursuits, occurred within the 0 to 10 hour period, reported by 17 (85 per cent) of Silicon Valley respondents. Results show quite a high percentage of Dublin (41.2 percent) and Silicon Valley respondents (40 percent) reported that they spent no time on academic pursuits. 28.5 per cent of Dublin and 45 per cent of Silicon Valley respondents spent up to 10 hours on training and academic pursuits each month. Looking at the mean, Dublin's mean was 6.5, and the mean in Silicon Valley was 10. Overall results indicate that Silicon Valley respondents tend to spend more time on training and academic pursuits than Dublin respondents.

5.11.26 Hours Spent at Work

For Dublin respondents, data reported for hours spent at work per month was within the range 100 to 240. Variance was 614.72, and standard deviation was 25.59. The largest group of Dublin respondents (16: 47.1 per cent) reported that they spent 160 hours each

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month at work. The most common range of hours reported for work, occurred within the 150 to 160 hour period, reported by 21 Dublin respondents (61.8 per cent). At the top range of hours worked, 4 respondents (11.7 per cent) worked between 190 and 240 hours per month.

In Silicon Valley data reported for hours spent at work was within the range 0 to 320 hours. Variance was very high at 5290.72, and standard deviation was 72.74. Silicon Valley respondents (5: 25 per cent) reported that they spent 200 hours each month at work, while 3 Silicon Valley respondents (15 per cent) reported spending 170 hours at work. The most common range of hours reported to be spent at work, occurred within the 170 to 200 hour period, reported by 9 (45 per cent) of Silicon Valley respondents. At the top range of hours worked, 10 Silicon Valley respondents (50 per cent) worked between 190 and 320 hours per month. Looking at the mean, Dublin's mean is 160.65, whereas Silicon Valley's mean is 167.75. Results indicate that the majority of Dublin respondents (61.8 percent) work between 150 and 160 hours per month, while the majority of Silicon Valley respondents report a higher number of hours spent working per month of between 170 and 300 (65 percent).

5.11.27 Pearson Bivariate Correlations

Pearson bivariate correlation (two-tailed) tables for various activities indicate the following positive correlations at 95 percent level of significance:

Combined Dublin and Silicon Valley table: Fulfilling leisure pursuits, and hobbies, leisuretime and socialising ($r=.352$, $p<.005$).

Silicon Valley table: Fulfilling leisure pursuits, and hobbies, leisuretime and socialising ($r=.664$, $p<.005$).

Pearson bivariate correlation (two-tailed) tables for various activities indicate the following negative correlations at 0.05 (95 percent) level of significance: Silicon Valley table: Hobbies and leisure, and work ($r=-.605$, $p<.005$).

Dublin correlations are not significant in either positive or negative direction. The Silicon Valley negative correlation shows that time spent on work is negatively related to hobbies, leisuretime and socialising.

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5.11.28 Question 12. Please indicate which of the following needs are adequately met by your current employment, with 100% indicating needs are fully met, and 0 indicating that these needs are not met at all.

Needs Met by Current Employment	%
Financial security	
Sense of belonging	
Feeling of contributing	
Sense of achievement	

5.11.29 Descriptive Statistics: Dublin

Dublin respondents chose financial security (mean: 60.88) as the need that is most met by current employment. This was followed by a sense of belonging (mean: 53.38), and a feeling of contributing (mean: 52.65). A sense of achievement was the need least met by current employment (mean: 49.79).

5.11.30 Positive Correlations: Dublin

Pearson bivariate correlation (two-tailed) tables for needs met by current employment as reported by Dublin residents indicate the following positive correlations:

Sense of belonging, and feeling of contributing ($r=.785$, $p<.005$)

Sense of belonging, and sense of achievement ($r=.628$, $p<.005$)

Feeling of contributing, and sense of achievement ($r=.550$, $p<.005$)

5.11.31 Descriptive Statistics: Silicon Valley

The results of needs met by current employment for Silicon Valley correspond very closely with those of Dublin respondents. Silicon Valley respondents chose financial security (mean: 69.5) as the need that is most met by current employment. This was followed by a sense of belonging (mean: 50.75), and a feeling of contributing (mean: 50.25). A sense of achievement was the need least met by current employment (mean: 49.75). The needs reported to be met by employment in Silicon Valley occur in the same

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exact order as those reported to be met in Dublin, although financial security receives a higher mean in Silicon Valley (69.5) than in Dublin (60.88).

5.11.32 Positive Correlations: Silicon Valley

Pearson bivariate correlation (two-tailed) tables for needs met by current employment as reported by Silicon Valley residents indicate the following positive correlations:

Financial security, and sense of belonging ($r=.472$, $p<.001$)

Financial security, and feeling of contributing ($r=.628$, $p<.001$)

Financial security, and sense of achievement ($r=.642$, $p<.005$)

Sense of belonging, and feeling of contributing ($r=.758$, $p<.005$)

Sense of belonging, and sense of achievement ($r=.888$, $p<.005$)

Feeling of contributing, and sense of achievement ($r=.935$, $p<.005$)

5.11.33 Differences in Correlations between Dublin and Silicon Valley

Positive correlations were found to occur in both locations between sense of belonging and feeling of contributing, sense of belonging and send of achievement, and feeling of contributing and send of achievement.

Silicon Valley, unlike Dublin results, also showed positive correlations for financial security and sense of belonging, financial security and feeling of contributing, financial security and sense of achievement.

5.11.34 Question 13. On a scale of 0 to 5 (with 0 indicating no importance and 5 indicating great importance), please indicate the importance of introducing the following to your workplace. Please also indicate with an asterisk if this facility already exists in your workplace.

Facilities	0-5 Scale
Crèche facilities	
Promotion of work-life balance	
Encouragement of further academic training	
Promotion based on seniority	
Telecommuting	
Job Sharing	
Extended maternity leave	

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Facilities	0-5 Scale
Paternity leave	
Funded counselling	
Unpaid leave option during family crisis	

5.11.35 Scale Used to Rate Importance of Introducing Various Policies to the Workplace

The scale used to rate the importance of introducing various policies to the workplace was from 0 to 5, where 0 indicated that the employee surveyed thought the policy to be of no importance, while a rating of 5 indicated that the employee thought the policy was of great importance. A rating of between 1 and 2 indicates a level of low importance; a rating of 3 indicates average importance; a rating of 4 indicates a level of high importance.

5.11.36 Importance of Introducing Creche Facilities

The importance of introducing crèche facilities to the work place received a large variety of responses (variance: 4.349) from Dublin respondents, with most responses occurring at the extremities of the rating. A rating of 0 (no importance) was given by 15 respondents (44.1 percent). A rating of 1 or 2 (low importance) was given by 2 respondents (5.8 percent). A rating of 3 (average) was given by 5 respondents (14.7 percent), while a rating of 4 (high importance) was given by 6 respondents (17.6 percent). A rating of 6 (great importance) was given by 6 respondents (17.6 percent). Overall, the level of importance of introducing crèche facilities as reported by Dublin respondents was found to be low (mean: 2.117; median: 2.5).

Silicon Valley respondents also reported a large variety of responses to the question on the importance of introducing crèche facilities to the work place (variance: 2.57). A rating of 0 (no importance) was given by 2 respondents (10 percent). A rating of 1 or 2 (low importance) was given by 7 respondents (35 percent). A rating of 3 (average) was given by 4 respondents (20 percent), while a rating of 4 (high importance) was given by 5 respondents (25 percent). A rating of 5 (great importance) was given by 2 respondents (10 percent). Overall, the level of importance of introducing crèche facilities as reported by Silicon Valley respondents was found to be of average importance (mean: 2.55; median: 3). Compared to Dublin respondents who considered the introduction of

crèche facilities to be of low importance, Silicon Valley respondents considered this policy to be of average importance.

5.11.37 Importance of Introducing Work-Life Balance

The importance of introducing work-life balance received the following from Dublin respondents: A rating of 0 (no importance) was given by 4 respondents (11.8 percent). A rating of 3 (average) was given by 4 respondents (11.8 percent), while a rating of 4 (high importance) was given by 14 respondents (41.2 percent). A rating of 5 (great importance) was given by 12 respondents (35.3 percent). Overall, the level of importance of introducing work-life balance facilities as reported by Dublin respondents was found to be average to high importance (mean: 3.7647; median: 4.0).

Silicon Valley respondents reported the following responses to the question on the importance of introducing work-life balance to the work place. A rating of 1 or 2 (low importance) was given by 4 respondents (20 percent). A rating of 3 (average) was given by 8 respondents (40 percent), while a rating of 4 (high importance) was given by 4 respondents (20 percent). A rating of 5 (great importance) was given by 4 respondents (20 percent). Overall, the level of importance of introducing work-life balance as reported by Silicon Valley respondents was found to be average (mean: 3.3; median: 3). Compared to Dublin respondents who considered the introduction of work-life balance policies to be of average to high importance, Silicon Valley respondents considered it to be of average importance.

5.11.38 Importance of Encouraging Academic Training

The importance of encouraging academic training in the work place received the following responses from Dublin respondents: A rating of 0 was given by 5 respondents (14.7 percent). A rating of 1 or 2 (low importance) was given by 2 respondents (5.9 percent). A rating of 3 (average) was given by 10 respondents (29.4 percent), while a rating of 4 (high importance) was given by 13 respondents (38.2 percent). A rating of 5 (great importance) was given by 4 respondents (11.8 percent). Overall, the level of importance of encouraging academic training as reported by Dublin respondents was found to be average (mean: 3.058; median: 3.5).

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Silicon Valley respondents gave a rating of 1 or 2 (low importance) by 9 respondents (45 percent). A rating of 3 (average) was given by 5 respondents (25 percent), while a rating of 4 (high importance) was given by 4 respondents (20 percent). A rating of 5 (great importance) was given by 2 respondents (10 percent). Overall, the level of importance of introducing academic training as reported by Silicon Valley respondents was found to be low to average (mean: 2.85; median: 3). Overall, Dublin considered the importance of introducing academic training into the workplace to be of average importance, while Silicon Valley respondents considered the importance of introducing academic training to warrant a low to average rating.

5.11.39 Importance of Promotion on the Basis of Seniority

The importance of introducing promotion based on seniority to the work place received the following responses by Dublin respondents. A rating of 0 no importance) was given by 10 respondents (29.4 percent). A rating of 1 or 2 (low importance) was given by 9 respondents (26.4 percent). A rating of 3 (average) was given by 12 respondents (35.3 percent), while a rating of 4 (high importance) was given by 3 respondents (8.8). Overall, the level of importance of introducing promotion based on seniority as reported by Dublin respondents was found to be low (mean: 1.85; median: 2).

Silicon Valley respondents reported the following responses as to the importance of introducing promotion based on seniority to the work place. A rating of 0 (no importance) was given by 10 respondents (50 percent). A rating of 1 or 2 (low importance) was given by 6 respondents (30 percent). A rating of 3 (average) was given by 4 respondents (20 percent). Overall, the level of importance of introducing promotion based on seniority as reported by Silicon Valley respondents was found to be low (mean: 1; median: .5). Both Dublin and Silicon Valley respondents considered the importance of introducing promotion based on seniority to be low.

5.11.40 Importance of Introducing Telecommuting

The importance of introducing telecommuting to the work place received the following responses from Dublin respondents. A rating of 0 (no importance) was given by 4 respondents (11.8 percent). A rating of 1 and < 3 (low importance) was given by 3

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respondents (8.8 percent). A rating of 3 (average) was given by 12 respondents (35.3 percent), while a rating of 4 (high importance) was given by 14.7 respondents (29.4 percent). A rating of 5 (great importance) was given by 5 respondents (14.7 percent). Overall, the level of importance of introducing telecommuting as reported by Dublin respondents was found to be average (mean: 3.16; median: 3).

Silicon Valley respondents reported the following responses as to the importance of introducing telecommuting to the work place. A rating of 3 (average) was given by 8 respondents (40 percent), while a rating of 4 (high importance) was given by 6 respondents (30 percent). A rating of 5 (great importance) was given by 6 respondents (30 percent). Overall, the level of importance of introducing telecommuting as reported by Silicon Valley respondents was found to be high (mean: 3.9; median: 4). Compared to Dublin respondents who considered the introduction of telecommuting to be of average importance, Silicon Valley respondents considered this policy to be of high importance.

5.11.41 Importance of Introducing Job Sharing

The importance of introducing job sharing to the workplace received the following Dublin responses. A rating of 0 (no importance) was given by 11 respondents (32.4 percent). A rating of 1 or 2 (low importance) was given by 6 respondents (17.6 percent). A rating of 3 (average) was given by 6 respondents (17.6 percent), while a rating of 4 (high importance) was given by 4 respondents (11.8 percent). A rating of 5 (great importance) was given by 7 respondents (20.6 percent). Overall, the level of importance of introducing job sharing as reported by Dublin respondents was found to be low (mean: 2.29; median: 2.5).

Silicon Valley respondents reported the following responses to the question of the importance of introducing job sharing to the workplace. A rating of 0 (no importance) was given by 7 respondents (35 percent). A rating of 1 or 2 (low importance) was given by 5 respondents (25 percent). A rating of 3 (average) was given by 7 respondents (35 percent), while a rating of 4 (high importance) was given by 1 respondents (5 percent). Overall, the level of importance of introducing job sharing as reported by Silicon Valley respondents was found to be low to average (mean: 1.75; median: 2). Both Dublin and Silicon Valley respondents considered the importance of job sharing to be low.

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5.11.42 Importance of Introducing Extended Maternity Leave

The importance of introducing extended maternity leave to the workplace received the following responses from Dublin respondents. A rating of 0 (no importance) was given by 13 respondents (38.2 percent). A rating of 1 or 2 (low importance) was given by 3 respondents (8.8 percent). A rating of 3 (average) was given by 7 respondents (20.6 percent), while a rating of 4 (high importance) was given by 4 respondents (11.8 percent). A rating of 5 (great importance) has given by 7 respondents (20.6 percent). Overall, the level of importance of introducing extended maternity leave as reported by Dublin respondents was found to be low (mean: 2.26; median: 3).

Silicon Valley respondents reported the following responses as to the importance of introducing extended maternity leave to the workplace. A rating of 0 was given by 2 respondents (10 percent), while a rating of 1 or 2 (low importance) was given by 8 respondents (40 percent). A rating of 3 (average) was given by 3 respondents (15 percent), while a rating of 4 (high importance) was given by 4 respondents (20 percent). A rating of 5 (great importance) was given by 7 respondents (20.6 percent). Overall, the level of importance of introducing extended maternity leave as reported by Silicon Valley respondents was found to be low (mean: 2.6; median: 2.5). Both Dublin and Silicon Valley respondents considered the importance of extended maternity leave to be low.

5.11.43 Importance of Introducing Paternity Leave

The importance of introducing paternity leave to the work place received the following responses from Dublin employees surveyed. A rating of 0 (no importance) was given by 9 respondents (26.5 percent). A rating of 1 or 2 (low importance) was given by 5 respondents (14.7 percent). A rating of 3 (average) was given by 8 respondents (23.5 percent), while a rating of 4 (high importance) was given by 4 respondents (11.8 percent). A rating of 5 (great importance) was given by 8 respondents (23.5 percent). Overall, the level of importance of introducing paternity leave as reported by Dublin respondents was found to be low to average (mean: 2.6; median: 3).

Silicon Valley respondents reported the following responses on the importance of introducing paternity leave to the work place. A rating of 0 was reported by 2 respondents (10 percent), while a rating of 1 or 2 (low importance) was given by 7 respondents (35

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percent). A rating of 3 (average) was given by 5 respondents (25 percent), while a rating of 4 (high importance) was given by 5 respondents (25 percent). A rating of 5 (great importance) was given by 1 respondent (5 percent). Overall, the level of importance of introducing paternity leave as reported by Silicon Valley respondents was found to be low to average (mean: 2.55; median: 2.3). Compared to Dublin respondents who considered the introduction of paternity leave to be of low to average importance, Silicon Valley respondents considered it to be of low importance.

5.11.44 Importance of Introducing Funded Counselling

The importance of introducing funded counselling to the work place received the following responses from Dublin employees surveyed. A rating of 0 (no importance) was given by 7 respondents (20.6 percent). A rating of 1 or 2 (low importance) was given by 7 respondents (20.6 percent). A rating of 3 (average) was given by 13 respondents (38.2 percent), while a rating of 4 (high importance) was given by 7 respondents (20.6 percent). Overall, the level of importance of introducing funded counselling as reported by Dublin respondents was found to be low to average (mean: 2.32; median: 3).

Silicon Valley respondents reported the following responses to the question on the importance of introducing funded counselling to the work place. A rating of 0 (no importance) was given by 5 respondents (25 percent). A rating of 1 or 2 (low importance) was given by 7 respondents (35 percent). A rating of 3 (average) was given by 4 respondents (20 percent), while a rating of 4 (high importance) was given by 2 respondent (10 percent). A rating of 5 (great importance) was given by 2 respondents (10 percent). Overall, the level of importance of introducing funded counselling as reported by Silicon Valley respondents was found to be low (mean: 2.1; median: 2). Silicon Valley respondents considered the importance of introducing funded counselling to the workplace to be low, while Dublin respondents considered the importance of introducing funded counselling to be low to average.

5.11.45 Importance of Unpaid Leave During Family Crisis

The importance of introducing unpaid leave during crisis to the work place received the following responses from Dublin employees surveyed. A rating of 0 (no importance) was

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given by 2 respondents (5.9 percent). A rating of 1 or 2 (low importance) was given by 4 respondents (11.8 percent), while a rating of 3 (average importance) was given by 4 (11.8 per cent) respondents. A rating of 4 (high importance) was given by 13 respondents (38.2 percent). A rating of 5 (great importance) was given by 11 respondents (32.4 percent). Overall, the level of importance of introducing unpaid leave during crisis as reported by Dublin respondents was found to be high (mean: 3.735; median: 4).

Silicon Valley respondents reported the following responses to the question on the importance of introducing unpaid leave during crisis to the work place. A rating of 1 or 2 (low importance) was given by 1 respondents (5 percent). A rating of 3 (average) was given by 8 respondents (40 percent), while a rating of 4 (high importance) was given by 9 respondents (45 percent). A rating of 5 (great importance) was given by 2 respondents (10 percent). Overall, the level of importance of introducing unpaid leave during crisis as reported by Silicon Valley respondents was found to be high (mean: 3.6; median: 4). Both Dublin and Silicon Valley respondents considered the importance of introducing unpaid leave during crisis to the workplace to be high.

5.11.46 Question 14. Who would represent you if there were a problem at work?

Responses to the question of representation if there was a problem at work varied greatly between both locations, although the majority in both cases favoured self-representation. 11 Dublin respondents (32.4 percent) reported that they would represent themselves, while 7 respondents (20.6 percent) stated that a union would represent them, 4 Dublin respondents (11.8 percent) reported that a manager/supervisor would represent them, 5 Dublin employees surveyed (14.7 percent) did not respond, and 7 respondents (20.6 percent) stated that they did not know who would represent them.

14 Silicon Valley respondents (70 percent) reported that they would represent themselves, 2 Silicon Valley respondents (10 percent) reported that human resources would represent them, 2 respondent (10 percent) stated that a manager/supervisor would represent them, while 1 respondent (5 percent) stated that an attorney would represent them. 1 Silicon Valley employee surveyed (5 percent) did not respond.

Overall the majority of both Dublin (32.4 percent) and Silicon Valley (70 percent) respondents reported that they would represent themselves if a problem developed at

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work. Dublin respondents however were more likely to be represented by a union (20.6 percent), or by managers and supervisors (11.8 percent) than were Silicon Valley respondents. Silicon Valley respondents were more likely to be represented by human resources (10 percent) or by an attorney (5 percent) than were Dublin respondents.

5.11.47 Question 15. Please tick which of the following best describes your work environment, with strongly agree indicating a strong agreement with the values listed, and strongly disagree indicating a strong disagreement with the value listed.

Work Environment	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
Stressful	☐	☐	☐	☐	☐
Relaxed	☐	☐	☐	☐	☐
Team-orientated	☐	☐	☐	☐	☐
Competitive	☐	☐	☐	☐	☐
Good core values	☐	☐	☐	☐	☐
Promotes creativity	☐	☐	☐	☐	☐
Authoritative	☐	☐	☐	☐	☐
Pressurised	☐	☐	☐	☐	☐
Promotes work-life balance	☐	☐	☐	☐	☐
Critical	☐	☐	☐	☐	☐
Supportive	☐	☐	☐	☐	☐
Flexible	☐	☐	☐	☐	☐
People-orientated	☐	☐	☐	☐	☐
Appreciative	☐	☐	☐	☐	☐

5.11.48 Work Environment: Stressful

A majority of Dublin respondents agreed with the statement that their work environment was stressful. 19 Dublin respondents (55.9 percent) agreed, while 3 (8.8 percent) strongly agreed, giving a total of 64.1 percent who agreed that work was stressful. However a sizeable minority disagreed with this statement: 8 respondents (23.5 percent) disagreed, and 1 respondent (2.9 percent) strongly disagreed, giving a total of 26.4 Dublin respondents who disagreed that work was stressful.

A large majority of Silicon Valley respondents also agreed that their work environment was stressful. 10 Silicon Valley respondents (50 percent) agreed, and 7 (35 percent) strongly agreed, giving a total of 85 percent who agreed that work was stressful.

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Only 1 respondent (5 percent) strongly disagreed with the statement that their work environment was stressful. Overall both locations agreed that their work environments were stressful, though there was a larger majority in Silicon Valley (85 per cent) who agreed.

5.11.49 Work Environment: Relaxed

A small majority of Dublin respondents agreed with the statement that their work environment was relaxed, though a sizeable minority disagreed with the statement. 10 Dublin respondents (29.4 percent) agreed, while 7 (20.6 percent) strongly agreed, giving a total of 50 percent who agreed that work was relaxed. However a large minority disagreed with this statement: 13 respondents (38.2 percent) disagreed, and 1 respondent (2.9 percent) strongly disagreed, giving a total of 41.1 percent of Dublin respondents who disagreed that work was relaxed.

In contrast to Dublin respondents, a large majority of Silicon Valley respondents disagreed that their work environment was relaxed. 10 Silicon Valley respondents (50 percent) disagreed, and 8 (40 percent) strongly agreed, giving a total of 90 percent who disagreed that work was relaxed. Only 1 respondent (5 percent) agreed and another respondent (5 per cent) strongly agreed with the statement that their work environment was relaxed. Overall, Silicon Valley respondents reported a very large majority who disagreed that their work environment was relaxed, and although a majority of Dublin respondents also reported their disagreement that work was relaxed, a sizeable minority agreed that work was relaxed.

5.11.50 Work Environment: Team-orientated

A majority of Dublin respondents agreed with the statement that their work environment was team-orientated. 16 Dublin respondents (47.1 percent) agreed, while 4 (11.8 percent) strongly agreed, giving a total of 58.9 percent who agreed that work was team-orientated. A minority disagreed with this statement: 7 respondents (20.6 percent) disagreed, and 1 respondent (2.9 percent) strongly disagreed, giving a total of 23.5 percent of Dublin respondents who disagreed that work was team-orientated. 5 Dublin respondents (14.7 percent) reported that they were undecided.

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A majority of Silicon Valley respondents agreed that their work environment was team-orientated. 10 Silicon Valley respondents (50 percent) agreed that work was team-orientated. A sizeable minority of Silicon Valley respondents however disagreed that their work environment was team-orientated. 5 Silicon Valley respondents (25 percent) disagreed, and 1 respondent (5 per cent) strongly disagreed, giving a total of 30 who disagreed that work was team-orientated. 4 Silicon Valley respondents (20 percent) reported that they were undecided. Overall a majority of both Dublin and Silicon Valley respondents agreed that their work environments were team-orientated.

5.11.51 Work Environment: Competitive

A majority of Dublin respondents agreed with the statement that their work environment was competitive. 15 Dublin respondents (44.1 percent) agreed, while 3 (8.8 percent) strongly agreed, giving a total of 52.9 percent who agreed that work was competitive. A minority disagreed with this statement: 7 respondents (20.6 percent) disagreed. 8 respondents (23.5 percent) were undecided as to whether or not their work environment was competitive.

A majority of Silicon Valley respondents agreed that their work environment was competitive. 11 Silicon Valley respondents (55 percent) agreed, and 4 (20 percent) strongly agreed, giving a total of 75 percent who agreed what work was competitive. Only 1 respondent (5 percent) disagreed with this statement. 4 Silicon Valley respondents (20 percent) were undecided as to whether or not their work environment was competitive. Overall both locations agreed with the statement that their work environments are competitive.

5.11.52 Work Environment: Good Core Values

A majority of Dublin respondents agreed with the statement that their work environment had good core values. 15 Dublin respondents (44.1 percent) agreed, while 1 (2.9 percent) strongly agreed, giving a total of 47 percent who agreed what their work organisation contained good core values. A minority disagreed with this statement: 8 respondents (23.5 percent) disagreed, and 2 respondent (5.9 percent) strongly disagreed, giving a total

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of 29.4 percent of Dublin respondents who disagreed that their work environment contained good core values. 7 Dublin respondents (20 percent) were undecided.

In contrast to Dublin respondents, a small majority of Silicon Valley respondents disagreed that their work environment had good core values. 6 Silicon Valley respondents (30 percent) disagreed, and 3 (16 percent) strongly disagreed, giving a total of 46. percent who disagreed that their work organisation had good core values. 8 Silicon Valley respondents (40 percent) agreed with the statement that their work environment had good core values. 3 Silicon Valley respondents (15 percent) were undecided. Overall, a majority of Dublin respondents agreed with the statement that their work environment had good core values, while in contrast a small majority of Silicon Valley respondents disagreed with this statement.

5.11.53 Work Environment: Promotes Creativity

A majority of Dublin respondents disagreed with the statement that their work environment promotes creativity. 14 Dublin respondents (41.2 percent) disagreed, while 1 (2.9 percent) strongly disagreed, giving a total of 44.1 percent who disagreed that their work promotes creativity. The following Dublin respondents agreed with the creativity statement: 6 respondents (17.6 percent) agreed, and 2 respondents (5.9 percent) strongly agreed, giving a total of 23.5 Dublin respondents who agreed that work promoted creativity. 7 Dublin respondents (31.8 percent) were undecided.

A small majority of Silicon Valley respondents also disagreed that their work environment promoted creativity. 7 Silicon Valley respondents (35 percent) disagreed, and 1 (5 percent) strongly agreed, giving a total of 40 percent who disagreed that work promotes creativity. 5 Silicon Valley respondents (25 percent) agreed, and 1 respondent (5 percent) strongly agreed, giving a total of 30 per cent who agreed that their work place promoted creativity. 7 Silicon Valley respondents (35 percent) were undecided. Overall both locations disagreed with the statement that their work environment promoted creativity.

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5.11.54 Work Environment: Authoritative

A small majority of Dublin respondents agreed that work was authoritative: 12 (35.3 percent) agreed, and 2 (5.9 percent) strongly agreed, giving a total of 41.2 percent agreed with the statement that their work environment was authoritative. The following Dublin respondents disagreed with this statement: 7 (20.6 percent) disagreed, while 2 (5.9 percent) strongly disagreed, giving a total of 26.5 percent who disagreed that work was authoritative. A large number of Dublin respondents were undecided as to whether or not their work place was authoritative: 10 respondents (29.4 percent).

A small majority of Silicon Valley respondents also agreed that their work environment was authoritative. 6 Silicon Valley respondents (30 percent) agreed, and 2 (10 percent) strongly agreed, giving a total of 40 percent who agreed what work was authoritative. 6 respondents (30 percent) disagreed with the statement that their work environment was authoritative. 6 Silicon Valley respondents (30 percent) were undecided as to whether or not their workplace was authoritative. Overall both locations had a small majority of respondents who agreed that their work environment was authoritative.

5.11.55 Work Environment: Pressurised

A large majority of Dublin respondents agreed with the statement that their work environment was pressurised. 18 Dublin respondents (52.9 percent) agreed, and 2 respondents (5.9 percent) strongly agreed, giving a total of 58.8 percent who agreed that the work environment was pressurized. 5 Dublin respondents (14.7 percent) disagreed with this statement. 8 Dublin respondents (23.5 percent) were undecided.

A large majority of Silicon Valley respondents also agreed that their work environment was pressurized. 13 Silicon Valley respondents (65 percent) agreed, and 5 (25 percent) strongly agreed, giving a total of 90 percent who agreed with the statement that their work was pressurized. Only 1 Silicon Valley respondent (5 percent) disagreed with this statement, while 1 respondent (5 percent) was undecided. Overall a large majority of respondents in both locations agreed with the statement that their work environment was pressurised.

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5.11.56 Work Environment: Promotes Work-Life Balance

A majority of Dublin respondents disagreed with the statement that their work environment promoted work-life balance. 14 Dublin respondents (41.2 percent) disagreed that work promoted work-life balance, while 3 respondents (8.8 percent) strongly disagreed, giving a total of 50 per cent of Dublin respondents who disagreed that work promoted work-life balance. 7 Dublin respondents (20.6 percent) agreed, while 8 Dublin respondents (21.5 percent) were undecided.

A majority of Silicon Valley respondents also disagreed that their work environment promoted work-life balance. 6 Silicon Valley respondents (30 percent) disagreed, and 5 (25 percent) strongly disagreed, giving a total of 55 percent who disagreed with the statement that work promoted work-life balance. Only 2 Silicon Valley respondents (10 percent) agreed with this statement, while 7 respondents (35 percent) were undecided. Overall respondents from both locations disagreed with the statement that their work promoted work-life balance.

5.11.57 Work Environment: Critical

A small majority of Dublin respondents agreed with the statement that their work environment was critical. 14 Dublin respondents (41.2 percent) agreed that work was critical. 10 Dublin respondents (29.4 percent) agreed that work was critical, while 1 respondent (2.9 percent) strongly disagreed that work was critical, giving a total of 32.3 percent who disagreed. 4 Dublin respondents (18.2 percent) were undecided.

A small majority of Silicon Valley respondents also agreed that their work environment was critical. 6 Silicon Valley respondents (30 percent) agreed, and 3 (15 percent) strongly agreed, giving a total of 45 percent who agreed what work was critical. 7 respondents (35 percent) disagreed with the statement that their work environment was critical. 4 Silicon Valley respondents (20 percent) were undecided. Overall respondents from both locations agreed with the statement that their work environment is critical.

5.11.58 Work Environment: Supportive

A majority of Dublin respondents agreed with the statement that their work environment was supportive. 15 Dublin respondents (44.1 percent) agreed, while 2 respondents (5.9

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percent) strongly agreed, giving a total of 50 percent who agreed what work was supportive. However 8 respondents (23.5 percent) disagreed that work was supportive, and 8 Dublin respondents (23.5 percent) were undecided.

A small majority of Silicon Valley respondents also agreed that their work environment was supportive. 8 Silicon Valley respondents (40 percent) agreed, and 1 (5 percent) strongly agreed, giving a total of 45 percent who agreed that work was supportive. 5 Silicon Valley respondents (25 percent) disagreed, and 2 respondents (10 percent) strongly disagreed with the statement that their work environment was supportive, giving a total of 35 percent of respondents who disagreed. 4 Silicon Valley respondents (20 percent) were undecided. Overall respondents from both locations agreed with the statement that their work environment was supportive, though this was by a small majority in the case of Silicon Valley.

5.11.59 Work Environment: Flexible

A large majority of Dublin respondents agreed with the statement that their work environment was flexible. 23 Dublin respondents (67.6 percent) agreed, while 1 (2.9 percent) strongly agreed, giving a total of 70.5 percent who agreed what work was flexible. 4 Dublin respondents (11.8 percent) disagreed that work was flexible, while 5 Dublin respondents (14.7 percent) were undecided.

A majority of Silicon Valley respondents also agreed that their work environment was flexible. 9 Silicon Valley respondents (45 percent) agreed that work was flexible, while 2 respondents strongly agreed (10 percent) giving a total of 55 percent of respondents who agreed that their work environment was flexible. 3 Silicon Valley respondents (15 percent) disagreed, and 1 respondent (5 percent) strongly disagreed, giving a total of 20 percent respondents who disagreed with the statement that their work environment was flexible. 5 Silicon Valley respondents (25 percent) were undecided. Overall both Dublin and Silicon Valley respondents agreed that their work environment was flexible.

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5.11.60 Work Environment: People-orientated

A small majority of Dublin respondents agreed with the statement that their work environment was people-orientated. 10 Dublin respondents (29.4 percent) agreed, while 5 respondents (14.7 percent) strongly agreed, giving a total of 44.1 percent who agreed with the statement that their workplace was people-orientated. However a large minority disagreed with this statement: 11 respondents (32.4 percent) disagreed, and 2 respondents (5.9 percent) strongly disagreed, giving a total of 38.3 percent of Dublin respondents who disagreed that work was people-orientated. 5 Dublin respondents (14.7 percent) were undecided.

A majority of Silicon Valley respondents also agreed that their work environment was people-orientated. 7 Silicon Valley respondents (35 percent) agreed, and 3 (15 percent) strongly agreed, giving a total of 50 percent who agreed that work was people-orientated. 2 Silicon Valley respondents (10 percent) disagreed, while 1 resident (5 percent) strongly disagreed, giving a total of 20 per cent who disagreed with the statement that their work environment was people-orientated. 7 Silicon Valley respondents (35 percent) were undecided. Overall respondents from both locations agreed with the statement that their work environment was people-orientated.

5.11.61 Work Environment: Appreciative

Results were evenly divided for Dublin respondents as to whether their work environment was appreciative. 10 Dublin respondents (29.4 percent) agreed, while 2 (5.9 percent) strongly agreed, giving a total of 35.3 percent who agreed that work was appreciative. 8 respondents (23.5 percent) disagreed, and 4 respondents (11.8 percent) strongly disagreed, giving a total of 35.3 Dublin respondents who disagreed that work was appreciative. 9 Dublin Valley respondents (26.5 percent) were undecided.

A majority of Silicon Valley respondents agreed that their work environment was appreciative. 7 Silicon Valley respondents (35 percent) agreed, and 1 (5 percent) strongly agreed, giving a total of 40 percent who agreed that work was appreciative. 4 Silicon Valley respondents (20 percent) disagreed, while 1 respondent (5 percent) strongly disagreed, giving a total of 25 percent who disagreed with the statement that their work environment was appreciative. 7 Silicon Valley respondents (35 percent) were undecided.

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Overall Dublin respondents were split as to whether or not their work environment was appreciative, whereas the majority of Silicon Valley respondents agreed with the statement that their work environment was appreciative.

5.11.62 Question 16a. How long have you been in your current employment?

Dublin results for length of time in employment show a range from less than 1 year, to between 20 and 40 years. Variance is 44.056, and standard deviation is 6.637. 8 Dublin respondents (23.5 per cent) reported a length of time employed less than 3 years. 7 Dublin respondents (20.6 per cent) reported a length of time employed between 3 years and less than 6 years. 12 Dublin respondents (35.3 per cent) reported a length of time employed between 6 to less than 10 years. 2 Dublin respondents (5.9 percent) reported being employed for between 10 and 20 years, while 3 respondents (8.8 per cent) reported being employed for over 20 years.

Silicon Valley results for length of time of employment show a range from less than 1 year, to between 10 and 20 years. Variance is 54.70, and standard deviation is 7.39. 9 Silicon Valley respondents (45 per cent) reported a length of time employed between less than 3 years, compared with 23.5 percent of Dublin respondents. 6 Silicon Valley respondents (30 per cent) reported a length of time employed between 3 years and less than 6 years, compared with 20.6 percent of Dublin respondents. 1 Silicon Valley respondent (5 per cent) reported a length of time employed between 6 to less than 10 years, compared with 35.3 percent of Dublin respondents. 4 Silicon Valley respondents (20 percent) reported being employed for between 10 and less than 20 years, compared with 8.8 percent of Dublin respondents.

Overall variance is high for both locations, and results are fairly evening spread across the whole spectrum of years employed. Results however indicate that Dublin respondents (with a mean of 7.66 years) may be employed for longer periods of time compared to Silicon Valley respondents (with a mean of 6.1 years employed).

5.11.63 Question 16b. How long were you in your last employment?

Dublin results for length of time in last employment show a range from less than 1 year, to 10 years. Variance is 6.84, and standard deviation is 2.61. 13 Dublin respondents (38.2

per cent) reported that the current job was their first job. 12 Dublin respondents (35.3 per cent) reported a length of time employed in their last job as less than 3 years. 5 Dublin respondents (14.7 per cent) reported a length of time employed in last job between 3 and less than 6 years. 2 Dublin respondent (5.9 percent) reported being employed in last job between 6 and less than 10 years.

Silicon Valley results for length of time of last employment show a range from less than 1 year to 5 years. Variance is very low at 1.44, and standard deviation is 1.20. 1 Silicon Valley respondent (5 per cent) reported that this was a first job, compared with 38.2 per cent of Dublin respondents. 16 Silicon Valley respondents (80 per cent) reported a length of time in last employment of less than 3 years, compared with 35.3 percent of Dublin respondents. 2 Silicon Valley respondents (10 per cent) reported a length of time in last employment of 3 years or more but less than 6 years, compared with 17.7 per cent of Dublin respondents.

Overall these results indicate that the majority of Dublin respondents (38.2 percent) were still working at their first job, while the majority of Silicon Valley respondents had worked between 1 and 3 years in their last employment (75 percent). The mean of 2.61 years for Dublin respondents implies that they were employed for longer periods of time in their last employment compared to Silicon Valley respondents (with a mean of 1.63).

5.11.64 Question 16c. What is the optimum time you consider to be in employment in any firm?

Both sets of results for optimum time employed from Dublin and Silicon Valley show a majority of respondents who favoured length of employment of between 4 years and less than 10 years: 19 Dublin respondents (55.9 per cent), and 15 Silicon Valley respondents (75 per cent). 6 Dublin employees surveyed (17.6 percent) did not respond to this question.

5.11.65 Question 17. How many hours do you spend at work per week, taking an approximate average over the last three months? < 30, 31 – 35, 36 – 40, 41 – 45, 46 – 50, 51 – 55, 56 – 60, 61 – 65, 66 – 70, > 70

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The largest response from Dublin employees surveyed as to hours worker per week was as follows: 36 to 40 hours: 13 respondents (38.2 percent); 41 to 45 hours: 10 respondents (29.4 per cent); 46 to 50 hours: 5 respondents (14.7 percent); and 31 to 35 hours: 4 respondents (11.8 percent).

The largest response from Silicon Valley employees surveyed as to hours worker per week was as follows: 46 to 50: 8 respondents (40 percent); 41 to 45 hours: 4 respondents (20 per cent); 36 to 40 hours: 2 respondents (10 percent); 51 to 55 hours: 2 respondents (10 percent); 56 to 60 hours: 2 respondents (10 percent).

Overall, these results indicate that a large percentage of both Silicon Valley and Dublin respondents tend to work more than a 40 hour week. However, a greater percentage of Silicon Valley respondents tend to work more than forty hours per week (85 percent) compared to Dublin respondents (44.1 percent). Results also indicate that Silicon Valley workers tend to work longer hours: 20 percent of Silicon Valley respondents reported working between 50 and 60 hours per week, whereas no Dublin respondent reported working these hours.

5.12.0 Summary of Final Results for Personal and Development of IT Workers in Dublin, Ireland and Silicon Valey, California, USA

This section presents a summary of the analysis carried out on the main study final results.

5.12.1 Response Rate for Main Study

For the main study survey contact was made with the firms randomly selected from the Dublin and Silicon Valley databases mainly by email, and in some cases by telephone. The response rate of surveys received from IT employees in these firms was very low. 214 Dublin firms and 241 Silicon Valley firms were surveyed throughout the main study, giving a total of 455 firms surveyed. A total of 54 individual responses were received: 20 responses from Silicon Valley, and 34 responses from Dublin. The low level of response rate had been previously indicated by the preliminary study and was confirmed by the final main study. The summary of final results of main study is given below.

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5.12.2 General Data

With regard to **gender**, both Silicon Valley (80 percent) and Dublin (67.6 percent) of respondents reported a large majority of male IT workers. **Job descriptions** were more evenly dispersed among Dublin respondents, compared to Silicon Valley respondents. **Level of education** of respondents was largely at degree level, with Dublin respondents reporting that 63.6 percent had at least a third level degree qualification, compared with a higher level of 85 per cent of Silicon Valley respondents.

5.12.3 Professional Development

In terms of **professional development**, final results indicate that there is a great deal of variation in the knowledge skill base of IT workers in both locations. High levels of standard deviation (from 39.61 to 95.53) occur in the 27 responses to the skills/knowledge question, with standard deviation of greater than 50 occurring in 20 of these cases. A large level of variance is also discernible in each of the 27 cases. Thus data is not clustered near to the mean and in many cases data can be found at the extremities. The skills/knowledge in question 5 were derived from skills that IT workers reported they used as part of their work in the preliminary results of the main study. Results show that the median is 0 in all cases, and the mean figure is also very low (from 3.89 to 23.06). The level of variance is quite high in each case (over 528 in 16 out of 18 cases). The results derived from both question 4 (IT skills learned at college) and question 5 (IT skills used in the workplace) imply that the skills that IT workers use in their work varies enormously and does not follow a set pattern.

Membership of both professional computer societies was found to be very low for respondents in both Dublin (8.8 percent) and Silicon Valley (25 percent), giving a combined total in both locations of non-membership as 85.2 per cent.

Respondents in both locations reported a high percentage of new skills being acquired through **on the job training** (73.5 per cent by Dublin respondents, and 55 percent by Silicon Valley respondents. Results for proposing to reskill in emerging topics indicate that Dublin and Silicon Valley respondents favour different methods. Although both locations reskill by **personal research** (Silicon Valley respondents: 40 percent; Dublin respondents: 38.2 percent), a majority of Dublin respondents reskill with on the

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job training (47.1 percent), compared with only 10 percent of Silicon Valley respondent. Neither location was found to favour night courses.

With regard to **receiving training at work**, Dublin respondents report that they had received a greater degree of training within a 24-month period (86.3 per cent) than Silicon Valley respondents (70 percent). Results for the method of training favoured by employers to help employees acquire new skills was reported as being **mentoring by fellow staff** (Dublin respondents: 41.20; Silicon Valley respondents: 40 percent), followed by funding of external courses, and on the job training.

5.12.4 Personal Development

With regard to **the importance of various aspects of life**, Silicon Valley respondents assigned a high level of importance to work aspects of life: financially comfortable and successful work life, but also assigned importance to aspects of life in the home: compatible relationship, and happy family life. For Dublin respondents aspects of life in the home were highest: then came happy family life and compatible relationship, followed by leisure: satisfying friendships, and then by work aspects of life: financially comfortable. Results indicate that the greatest positive correlations occur between aspects of life of the same group, whether work, home, or leisure. Aspects of life were negatively correlated in five cases: work with leisure in four cases, and leisure with home in one case. These results imply that certain aspects of life pertaining to work, and others pertaining to leisure, negatively affect the pursuit of each other.

With regard to **time spent on hobbies/leisuretime/socialising, time spent with family, and time spent on fulfilling leisure pursuits**, results indicate that Dublin respondents spend more hours each month on each than Silicon Valley respondents. In contrast, results **for time spent at work** indicate that the majority of Dublin respondents (61.8 percent) work between 150 and 160 hours per month, while the majority of Silicon Valley respondents (65 percent) report a higher number of hours spent working per month of between 170 and 300 hours. With regard to **time spent on academic pursuits,** results show that Silicon Valley respondents report spending more time than Dublin respondents.

With regard to the needs most met by current employment, results for Silicon Valley respondents correspond very closely with those of Dublin respondents. Silicon Valley respondents chose financial security (mean: 69.5) as the need that is most met by current employment. This was followed by a sense of belonging (mean: 50.75), a feeling of contributing (mean: 50.25), and a sense of achievement (mean: 49.75). Dublin respondents also chose financial security (mean: 60.88) as the need that is most met by current employment. This was followed by a sense of belonging (mean: 53.38), a feeling of contributing (mean: 52.65), and a sense of achievement (mean: 49.79).

Dublin workers reported that the importance of **promoting work-life balance** policies to their workplace is high, whereas Silicon Valley workers reported that introducing **telecommuting** to the workplace is of high importance. Introducing **unpaid leave during family crisis** was reported to be of high importance by both sets of respondents. All other work-life policies (crèche facilities, encouragement of further academic training, romotion based on seniority, job Sharing, extended maternity leave, paternity leave, and funded counselling.) were rated as low or average in terms of importance by both Dublin and Silicon Valley respondents.

5.12.3 Work Environment

Responses to the question of **representation if there was a problem at work** varied greatly between both locations, although the majority of both Dublin (32.4 percent) and Silicon Valley (70 percent) respondents reported that they would represent themselves. Survey recipients were also asked to **describe their work environment**. The majority of respondents from both locations described their work environment as stressful, team-orientated, competitive, having good core values, being authoritative, pressurised, critical, supportive, flexible and people-orientated. The majority of respondents from both locations reported that their work environment did not promote work-life balance or creativity, and was not relaxed. Silicon Valley respondents also described work as appreciative, while Dublin respondents were divided on this issue.

Results for **length of time in current employment** indicate Dublin respondents (with a mean of 7.66 years) are employed for longer periods of time compared to Silicon Valley respondents (with a mean of 6.1 years employed). Results for **length of time in**

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last employment indicate that Dublin respondents (with a mean of 2.61 years) were employed for longer periods of time in their last employment compared to Silicon Valley respondents (with a mean of 1.63 years employed).

Results for the **optimum length of time in employment** indicate that both Dublin respondents (with a mean of 5.59 years) and Silicon Valley respondents (with a mean of 5.85 years employed), prefer length of employment to be between 4 and 10 years. Results for **hours worked per week** indicate that a large percentage of both Silicon Valley and Dublin respondents tend to work more than a 40 hour week. However, a greater percentage of Silicon Valley respondents tend to work more than forty hours per week (85 percent) compared to Dublin respondents (44.1 percent). Results also indicate that Silicon Valley workers tend to work longer hours: 20 percent of Silicon Valley respondents reported working between 50 and 60 hours per week, whereas no Dublin respondent reported working these hours.

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6.0.0 Discussion of Results

6.1.0 Introduction

A discussion of the results obtained from both studies: the comparative trade union pilot study in Silicon Valley, California, USA, and Dublin, Ireland, and the comparative professional and personal development main study in Silicon Valley, California, USA, and in Dublin, Ireland is outlined in this section. A review of research questions is conducted in light of results obtained from both surveys.

6.2.0 Gender

The research question under discussion set out **to establish the degree of gender division among workers in the IT sector in the Republic of Ireland and the United States.**

Results of gender for the trade union pilot studies undertaken in Dublin and Silicon Valley are shown below.

Table 13: Gender of Trade Union Pilot Study Responses in Dublin and Silicon Valley

Survey Location and Union Membership	Male	Female
Dublin Non-union	70.6% (12)	29.4% (5)
Dublin Union	85.7% (12)	14.3% (2)
Silicon Valley Non-union	72.2% (13)	27.8% (5)

In the trade union pilot study both Silicon Valley and Dublin female respondents were in a sizeable minority in the IT sector. Female Dublin non-union respondents accounted for just 29.4 percent of workers, while a slightly lower percentage of 27.8 percent of female Silicon Valley non-union respondents were recorded.

Results of gender for the professional and personal development main study undertaken in Dublin and Silicon Valley are shown below.

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Table 14. Gender of Professional and Personal Main Study Responses in Dublin and Silicon Valley

Survey Location	Male	Female
Dublin	67.6%	32.4%
Silicon Valley	80.0%	20.0%

In the professional and personal development main study both Silicon Valley (80 percent) and Dublin (67.6 percent) of respondents reported a large majority of male IT workers. Female Dublin respondents accounted for just 32.4 percent of workers, while a lower percentage of 20.0 female Silicon Valley respondents was reported.

The results of both studies therefore show that a large majority of IT workers are male. These results concur with research conducted in both the US and Ireland, which indicates that gender segmentation is a reality in the electronics and technology industry. Computers and technology have traditionally been viewed as male occupations (Webster: 1996). This traditional view has tended to alienate girls from developing technology skills in education (Kirkup and Keller: 1992; Hoyles: 1988), and has prevented women from gaining recognition for their technical endeavours (Zierdt-Warshaw et al: 2000). This sexual division of labour has meant that fewer women are employed at a professional level in IT firms, namely as scientists and engineers (Lockburn and Ormrod: 1993).

Women tend to be employed in the less skilled and lowest paid sectors of production and clerical in IT firms (Webster: 1996; Rees, cited by Ducatel: 1994). According to the National Science Foundation (NSF: 2000), women accounted for just 29.5 percent of scientists and engineers in the US labour force in 1998. In the Republic of Ireland Barry (1999), and Barry and Brunt (2002), reported that female managers and engineers were by far a minority in electronics firms in South-west Ireland, while the majority of females worked in the lower skilled clerical and operative areas. Since this thesis is surveying workers at the higher levels of IT (for example engineers, developers, and mangers), gender results for this pilot study are in line with current research on gender segmentation in the IT industry in both the US and the Republic of Ireland.

One reason for the even lower level of female respondents in the unionised IT sector is that trade union membership has traditionally comprised of male industrial

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workers (Roche: 1994). According to Putnam (2000) union membership is presently falling especially among female, white-collar knowledge workers.

6.3.0 Level of Education

The research question under discussion set out **to establish the level of education of IT workers in the Republic of Ireland and the United States.**

The level of education responses for the trade union pilot study undertaken in Dublin and Silicon Valley are shown below.

Table 15: Level of Education for Trade Union Pilot Study Responses in Dublin and Silicon Valley

Survey Location	**Postgrad Degree**	Undergrad. Degree	**No Degree**
Dublin Non-union	18.8%	68.8%	12.4%
Dublin Union	8.3%	41.7%	50%
Silicon Valley Non-union	22.2%	77.8%	0%

In the trade union pilot study, the most common level of education in all categories was the third level degree: Dublin non-union (68.8 percent), Dublin union (41.7 percent), and Silicon Valley non-union (77.8 percent). The third level diploma was only found to occur among Dublin union respondents (33.3 percent). This is a common technical qualification in Irish Institutes of Technology. It is interesting to note, however, that the third level diploma, which is a lower level qualification than the third level degree, is specified among Dublin union members but not by Dublin non-union members. The lower level of degrees reported by Dublin union respondents may signify a lower level of incentive for union members to gain higher qualifications, particularly in the Republic of Ireland, as the ICTU continues to secure above average pay deals and improvements in welfare benefits for its members (Lecher: 1994). In the trade union pilot study, the highest level of post-graduate degrees was reported by Silicon Valley non-union respondents (22.2%). Postgraduate degrees were reported by 18.8 percent of Dublin non-union respondents, and by only 8.3 percent of Dublin union respondents.

The level of education responses for the professional and personal development main study undertaken in Dublin, Ireland and Silicon Valley, California, USA are shown below.

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Table 16. Level of Education for Professional and Personal Development Main Study Responses in Dublin and Silicon Valley

Survey Location	Postgrad. Degree	Undergrad. Degree	No Degree
Dublin	30.3%	33.3%	36.4%
Silicon Valley	45.0%	40.0%	15.0%

Respondents' level of education was largely at degree level. 85 per cent of Silicon Valley respondents reported having a qualification of at least third level degree, which included 45 percent of respondents with postgraduate qualifications. A lower level of Dublin respondents (63.6 percent) reported having a third level degree qualification, with 30.3 percent of respondents having postgraduate qualifications.

From the results of both studies, it appears that a third-level degree is the standard for a career in IT in both Silicon Valley and Dublin, with postgraduate qualifications being quite common among IT workers in both locations. This is in line with existing research, as in the US from 1990-91 to 1994-95 master's degrees awarded increased 22.6 percent and doctoral degrees 15.8 percent, as workers require higher qualifications to insure employment at higher salary levels (National Center for Education Statistics: 1998).

In all categories across both studies it was found that Silicon Valley respondents have gained more postgraduate degrees than Dublin respondents. This may be due to the fact that in the US the IT sector has pushed the demand for professional higher education to well beyond a batchelor's degree (Kohl: 1998; Lynton: 1984; Carnevale: 1991). In the US lifelong lernning has become a necessary part of the professional worker's life in order to avoid obsolescence (Chadwin and Durrant: 1981; Dillman, Christenson, Slant, and Warner: 1995). The flexibility of graduate study arrangements has also made it possible for more professional to pursue higher degrees (Maehl: 2000).

Trade union pilot study respondents from Silicon Valley non-union, and from Dublin union and non-union categories expressed little interest in pursuing postgraduate study as part of their professional development. Dublin union respondents (35.7%) expressed the most interest of any group in undertaking postgraduate study as part of

their professional development. Next came Dublin non-union respondents (23.5%), and finally Silicon Valley non-union respondents (5.6%).

According to Kotter (1995) in our traditional way of thinking about education, learning was over when we completed a degree. The above results may reflect that way of thinking, since Silicon Valley non-union respondents reported the highest number of degree qualification (77.8%), but the lowest level of interest in pursuing postgraduate study (5.6). Silicon Valley non-union respondents also reported the highest level of post-graduate qualifications (22.2%), so perhaps these workers feel less in need of pursuing further formal qualifications.

Cost is also a major factor when considering further study. The pilot study results found a direct link between interest in further study (Q12b) and having that further study funded by their company (Q18). Dublin union respondents expressed the most interest of all groups in pursuing post graduate study (35.7 percent), but they also answered affirmatively that their company would fund further study in 85.7 percent of cases. The Dublin non-union group reported interest in undertaking postgraduate study in 23.5 percent of cases, and also reported that their organisation would fund study in 76.5 percent of cases. Silicon Valley respondents expressed the least interest in pursuing further study (5.6 percent), and reported that their organisations would fund further study in the least amount of cases (33.3 percent). However, it must be noted that San jose, the largest city in Silicon Valley, has the highest educated workforce in the US (Enterprise Ireland: 1999).

Although from the pilot study there is a low level of interest in postgraduate study among IT respondents, this may not be an indication of respondents' lack of interest in further study to update existing skills. It is well know in the industry that obsolescence needs to be avoided by learning new skills (Dublin: 1972), and that higher qualifications ensure better positions (Carnevale (1991). It may be a preference for IT respondents to learn new skills through mentoring, reading professional journals and subscribing to newsletters (Gaff et al: 1981), or via the Internet.

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6.4.0 Professional Development Plan

The research question under discussion sets out **to ascertain the degree to which IT workers have a professional development plan in the Republic of Ireland and the United States.**

In the trade union pilot study, the level of respondents who reported having a professional development plan is quite low in all categories. Dublin union respondents reported the highest rate of having a development plan (57.1%). This was followed by Dublin non-union respondents (35.3%), and Silicon Valley non-union respondents (33.3%).

Broadwell and Sizeman-House (1986) state that there are both short term and long term career goals that are important for people to set. They also note that most technical workers are used to setting plans when they are in college but they may forget that goal-setting is effective at all times in their lives. Chan (1992) states that every IT worker should have a professional development plan that clearly lists goals and milestones, and that these should be regularly updated. It would also seem that a professional development plan that includes life-learning would be of benefit to IT workers since there is such a high degree of change in skills to remain employable and a real danger of obsolescence (Kotter: 1995; Dublin: 1972; Cascio: 2000). **Therefore, the results of the trade union pilot study as to the level of importance of IT workers having a development plan are mixed, with a majority of Dublin union IT workers stating that they had a development plan, while both groups of non-union IT workers in Dublin and Silicon Valley show low levels of development planning.**

6.5.0 Personal Development Plan

The research question under discussion sets out **to ascertain the degree to which IT workers have a personal development plan in the Republic of Ireland and the United States.**

In the trade union pilot study, the question of what components would respondents include in a personal development plan was very poorly answered by the Silicon Valley non-union group, where 88.9 percent did not reply. It is interesting to note that Silicon Valley respondents also had the lowest rate of responses for having a

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professional development plan (33.3 percent). Pilot study results indicate that Silicon Valley respondents do not put much emphasis on planning either in their personal or professional lives.

Responses were higher in both Dublin groups, with Dublin non-union respondents of 52.9 percent, and Dublin union respondents of 85.7 percent being interested in developing a personal development plan. Overall the components that respondents would include in their personal development plan included leisure pursuits, non-career courses, and work-related courses. Silicon Valley respondents only included leisure pursuits (11.1 percent). Dublin union respondents concentrated more on work-related courses (50 percent), but also included non-career courses (21.4 percent) and leisure pursuits (7.1 percent). Dublin non-union respondents were more interested in non-career courses (35.3 percent), but also included work-related courses (5.9 percent), and leisure pursuits (5.9 percent).

Broadwell and Sizeman-House (1986) state that a person should make a personal development plan which includes setting short and long term goals, ascertaining one's appearance and level of health, improving communication skills, attending further study, reading literature, learning time management, developing hobbies, and spending time with family and friends. Handa (1984) advocates the practice of several disciplines to enhance personal development, including relaxation, motivation, goal setting, time management and productivity. Cartwright et al (1996) advocate developing an action plan to enhance personal development, that includes accessing ones current situation, planning how to achieve objectives, gathering resources, and time scheduling. Salmon (1985) states that personal development needs to be a continuous process throughout the life cycle.

From the pilot study results however it appears that IT respondents in Silicon Valley have little interest in planning for personal development whereas the majority of both union and non-union IT workers in Dublin reported having an interest in having a personal development plan.

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6.6.0 Knowledge Skill-base of IT Workers

The research question under discussion sets out **to ascertain the knowledge and skills level of IT workers in Republic of Ireland and the United States.**

In the professional and personal development main study, **there was a high level of variation found to occur in the level of IT skills that workers originally studied at college and now use in their work.** There was also a high variation found in the type of skills currently used as part of IT workers jobs in both Dublin and Silicon Valley.

With regard to IT college studies, there are many different computer courses that may be studied, and these also vary between countries. Thus, Balasubramanian (1992) describes professional training for software engineers in the US that leads to an undergraduate degree, as having the core subjects of technical, managerial, and software maintenance. In contrast, Hung and Kwok (1992) outline the degree in computer studies curriculum as taught in Hong Kong. This course consists of several modules, each of them covering technical and software development, but not concentrating on management studies. Sharepo (1985) states that courses taught in college are often not as effective or applicable as skills which are learned in the workplace. With regard to course syllabuses, Shapero (1985) states that in many advanced fields practice is far ahead of scholarship in terms of practical application and real learning.

With regard to a career in IT, the whole IT industry is based on rapidly changing technological development so that workers need to continually learn new skills in order to be employable. According to Marks, Scholarios et al (2001), firms are now demanding that employees are multiskilled, highly flexible `knowledge workers'. Hall and Mirvis (1995) state that multiskilling is an important component of maintaining employment, while Kotter (1995) states that learning new skills is the only chance that technical workers have to avoid obsolescence. Changes in technology are so great that individuals need to have a professional development plan in order to continually update their skills (Chan: 1992; Cascio: 2000; The British Computer Society; Institute of Electrical and Electronics Engineers; The Irish Computer Society). The results of the thesis concur with existing research, and clearly demonstrate that IT employees are using many diverse skills and technologies within their workplace.

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6.7.0 Reskilling at Work

The research question under discussion sets out **to ascertain how IT workers reskill to remain current in the rapidly changing technological industry in the Republic of Ireland and the United States.**

In the professional and personal development main study, the method of training favoured by employers to help employees acquire new skills was reported as being **mentoring by fellow staff** (Dublin respondents: 41.2 percent; Silicon Valley respondents: 40 percent), followed by **funding of external courses** (Dublin respondents: 35.3 percent, and Silicon Valley respondents: 30 percent), and **on the job training** (Dublin respondents: 17.6 percent, and Silicon Valley respondents: 25 percent).

Mentoring programs are also advocated by Horibe (1999), especially those that link senior employees with more junior ones as being invaluable for teaching new skills and to foster informal learning between peers. Horibe (1999) also states that mentoring needs to be voluntary to have any chance of working, and also that both peers chosen to work together must be a good match.

In the professional and personal development main study, the majority of both Dublin (73.5 percent) and Silicon Valley (55 percent) respondents reported that they currently acquire new skills through on the job training. This was followed by personal reading and research (40 Percent of Silicon Valley respondents and 26.5 percent of Dublin respondents). Night courses were poorly represented (five percent of Silicon Valley respondents, and zero percent of Dublin respondents).

These results for IT workers most often learning new skills on the job are in line with current research conducted by Chan: 1992; Horibe: 1999; Broadwell and Sizeman-House: 1986; Cross, Lynton, Nowlen and Stern: 1981. Companies introduce training when it is for their own benefit in terms of increasing short-term profitability, but the days of investing in employees' career development has largely disappeared (Cross, Lynton, Nowlen and Stern: 1981; Broadwell and Sizeman-House: 1986).

In the professional and personal development main study, future plans to reskill by workers through on the job training were reported by the majority of Dublin respondents (47.1 percent), compared with only 10 percent of Silicon Valley respondent. Future plans to reskill involved personal research for the majority of Silicon Valley

respondents (40 percent), but personal research was also well represented by Dublin respondents (38.2 percent). A small number of respondents from both locations favoured night courses (Silicon Valley respondents 20.0 percent and Dublin respondents 11.8 percent).

According to existing research, a development plan is vital for IT professionals to embark upon since their employability largely depends on their ability to continually update their competence and knowledge of new technology (Gould: 1972; Sheedy: 1976; Perez and Pino: 1992; Horibe: 1999; and Chan: 1992.) Thus it is ultimately in IT workers own interest to update skills. Several researchers have advocated personal research and reading trade journals to update skills (Horibe: 1999; Gaff et al: 1981; Perez and Pino: 1992). Shapero (1985) claims that professionals obtain most of their information from personal sources and information sources, such as newspapers and television. It is surprising though that night courses are not advocated by respondents as being part of their development plan, but since less companies are investing in employee's career development, perhaps a decrease in courses studied outside of work is inevitable due to cost and time factors.

From the main study conducted, the results for methods of training favoured by employers to help employees acquire new skills (mentoring by fellow staff) are in line with the methods of acquiring new skills that respondents reported receiving at work (on the job training), and with future plans that respondents have to reskill in Silicon Valley (on the job training). Results of the main study for Dublin respondents show that they favour personal reading and research to update skills.

Overall, results of methods of reskilling that employers favour for both locations are mentoring by fellow staff, followed by funding of external courses, and lastly on the job training. Results for current reskilling as favoured by IT workers show that both locations favour on the job training, followed by personal reading and research. Future plans to research however show a slight difference between locations, where on the job training is favoured by Dublin respondents followed by personal research, whereas personal research is favoured by Silicon Valley respondents.

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6.8.0 Training At Work

The research question under discussion sets out **to ascertain the level of training that IT workers receive from their employers in the Republic of Ireland and the United States.**

In the trade union pilot study, respondents were asked when they last received training for new skills required as part of their job. A large majority of Silicon Valley respondents (72.2%) reported they had never received training. In the Dublin non-union group most respondents reported having received training within a 1 to 15 month period (82.4 percent). In the Dublin union group most respondents received training within a 1 to 6 months period (71.4 percent).

The pilot study results for training are directly linked with results for the extent to which funding is provided by companies. Both Dublin groups report a high level of training, but also report receiving a high level of funding of courses from their companies (non-union: 76.5 percent; and union: 85.7 percent). Silicon Valley respondents however report a low degree of training, and also report receiving a low degree of funding by their company (33.3 percent). Therefore the funding of courses by companies seems to be a large incentive for employees to seek further training.

In the professional and personal development main study, Dublin respondents report that they had received a greater degree of training within a 24-month period (86.3 per cent) than Silicon Valley respondents (70 percent). However, 25 percent of Silicon Valley workers reported that they had never received training at work, compared to just 11.8 per cent of Dublin respondents.

According to Broadwell and Sizeman-House (1986), and Cross, Lynton, Nowlen and Stern (1981), companies choose participants for training programs on the basis of corporate priorities, and not on individual needs. It is up to the individual to make sure that he or she remains employable and current in terms of skills. IT companies are generally focused on short-term profitability and no longer seek to win workers' loyalty. According to Lyotard (1986), in the postmodern era learning and education have become oriented towards the provision of training and the inculcation of skills, and rather less concerned with liberal values and ideals (Lyotard: 1986).

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According to Hayes (1989), workers' positions are highly volatile and insecure. Thus, investment in training is only made by companies when absolutely necessary. The responsibility for reskilling is largely in the hands of individual IT workers (Dublin: 1972: Kotter: 1995; Friedman: 2003). **It appears however from both studies undertaken that Dublin IT companies consider investment in worker's training to be of more value than do Silicon Valley companies.**

6.9.0 Professional Computer Societies

The research question under discussion sets out **to establish the level of membership of professional societies in the Republic of Ireland and the United States.**

Membership of professional computer societies was poorly represented in both studies. In the trade union pilot study 11.8 percent of Dublin non-union respondents reported that they were members of two professional societies. 5.6 percent of Silicon Valley non-union respondents reported membership of a professional society.

In the professional and personal development main study a very low level of membership of professional computer societies was also reported by respondents in both Dublin and Silicon Valley. In Dublin only 8.8 percent of respondents reported being members, while in Silicon Valley 25 percent reported membership of professional computer societies.

From a review of the leading Irish and worldwide professional computer societies (the IEEE, the IEE, the BCS, the ICS, the STC) as per their literature and websites, the following member benefits are stated: networking at branch meetings, updating of skills through seminars and courses, the use of employment databases, continuous professional development, and discounts on software and other services such as insurance. According to Chan (1992) professional societies normally require their members to commit themselves through their professional codes of conduct to maintain professional competence and this positive encouragement helps members to continually update their skills. However, since IT professionals do not require a license to work, a society can only threaten members with expulsion if they did not comply with continual professional development requirements.

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There is also a claim by several computer organisations that there is the added benefit of status for members. According to Smart (1992) there are more professional workers in the postindustrial workplace but there is a devaluation of professionalism as technologically-skilled workers usually do not belong to any particular professional group, have specific qualifications or definite social status.

It was also found that none of the professional computer societies examined provides members with any form of company representation. Also IT companies do not require workers to be members of any professional organisation, or to have a licence in order to be employed. Therefore benefits accruing to members are not linked to salary increases, job security, or employment potential. The rate of membership of professional organisations seems very low from results in the main study undertaken, but this may be due to the fact that membership does not bestow any monetary or representational advantage on members in the IT sector.

6.10.0 Time Spent at Work

The research question under discussion sets **to investigate the time spent at work by IT workers in the Republic of Ireland and the United States.**

In the trade union pilot study, Silicon Valley respondents reported that on average 33.3 percent worked between 45 and 49 hours each week. This was the most common range of hours worked by Silicon Valley respondents. The next highest ranges reported by Silicon Valley respondents were 40 to 44 hours (27.8 percent) and 30 to 34 hours (27.8 percent). The most hours worked by any respondent in the pilot study was within the 55 to 59 range, worked by a Silicon Valley non-union respondent (5.6 percent). Overall, Silicon Valley respondents reported working more hours than either Dublin non-union or Dublin union groups.

In both Dublin union (35.7%) and non-union (47.1%) cases, 40 to 44 was the most common range of hours worked. The range 45 to 49 hours was reported by 5.9 percent of Dublin non-union workers, and by 21.4 percent of Dublin union workers. Overall, Dublin union workers were inclined to work fewer hours each week than were Dublin non-union workers, particularly in the 30 to 34 (non-union: 23.5%; union: 7.1%) and 35-39 (non-union 17.6%; union: 14.3%) hourly ranges.

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Companies that are non-unionised tend to expect their employees to prove themselves by working longer hours (Kidder: 1981). Unionised firms tend to ensure that the maximum working week of 48 hours is adhered to, as stipulated in European Union legislation (Hourihan: 1998). Although the IT sector has a legacy for working long hours, results from the pilot study indicate that IT unionised members in Dublin are more inclined to work less hours than non-union workers.

Silicon Valley non-union respondents worker considerably more than Dublin non-union workers, particularly in the higher 45 to 49 hourly range (Dublin non-union: 5.9 percent; Silicon Valley non-union 33.3 percent). This suggests that Dublin IT workers have not yet succumbed to working excessive hours to the same extent as their Silicon Valley non-union counterparts.

In the professional and personal development main study, results for hours worked per week indicate that a large percentage of both Silicon Valley and Dublin respondents tend to work longer than a 40 hour week. However, a greater percentage of Silicon Valley respondents tend to work more than forty hours per week (85 percent) compared to Dublin respondents (44.1 percent). Results also indicate that Silicon Valley workers tend to work longer hours: 20 percent of Silicon Valley respondents reported working between 50 and 60 hours per week, whereas no Dublin respondent reported working these hours.

The results of the trade union pilot study and the professional and personal development main study correlate with existing research, namely that Silicon Valley is synonymous with working long hours (Rogers and Larson : 1984). Hayes (1989) found that temporary immigrant workers in Silicon Valley are forced to work long hours. Cohen (2002) reports that US workers routinely work more than eighteen hours a day, while Kidder (1981) states that engineers work long hours to keep up with changing technology and the latest skills.

6.11.0 Quality of work-life

The research question under discussion sets out **to investigate the quality of work life of IT workers in the Republic of Ireland and the United States.**

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In the professional and personal development main study, there was a large variation in terms of the number of hours that respondents spent on various activities in both Dublin and Silicon Valley. Results however for the number hours spent on various activities, **Dublin respondents spend more time on hobbies/leisuretime/socialising, time spent with family, and time spent on fulfilling leisure pursuits each month than Silicon Valley respondents.**

In contrast, results for time spent at work indicate that Silicon Valley respondents spend more time at work than Dublin respondents. The majority of Dublin respondents (61.8 percent) work between 150 and 160 hours per month, while the majority of Silicon Valley respondents (65 percent) report a higher number of hours spent working per month of between 170 and 300 hours.

The fact that Silicon Valley respondents report spending a great deal of time at work is in line with research conducted in Silicon Valley by Rogers and Larson (1984), who state that Silicon Valley is synonymous with working long hours because the competition between companies is so intense. IT workers are largely committed to working long hours as part of the psychological contract with their companies (Marks, Scholarios et al: 2001), and due to the financial rewards that they receive for working long hours (Gouldner: 1961; Kunda: 1992). Existing research on quality of life states that developing a balance is the key, where work, family, socialising, hobbies and spiritually are all included in ones life (Collard and Gelatt: 2000). In the IT industry, however, the boundary between work and life is generally thought to be blurred (Ramsay: 1999; Kanter: 1977), where family life is often viewed through the demands of work (English-Lueck: 2002)

With regard to time spent on training and academic pursuits, results show that Silicon Valley respondents report spending slightly more time on academic pursuits than Dublin respondents, but overall results for academic pursuits were poor for both locations. Results show that quite a high percentage of Dublin (41.2 percent) and Silicon Valley respondents (40 percent) reported that they spent no time on academic pursuits. 28.5 percent of Dublin and 45 percent of Silicon Valley respondents spent up to 10 hours on training and academic pursuits each month.

Results for time spent on academic results seem to be at variance with existing research which strongly indicates that professional workers need to cultivate lifelong learning in order to avoid obsolescence ((Kotter: 1995; Chudwin and Durrant: 1981; Dublin: 1972; Shapero (1985); Cascio: 2000), and to enhance career prospects (Dillman, Christenson, Slant and Warner: 1995; Cascio: 2000). Also, existing research states that in the US lifelong learning continues to prosper (Chudwin and Durrant:1981), and has become a growing activity (Cross, Lynton, Nowlen and Stern: 1981). In the IT area of engineering research carried out by the IEEE-USA found that 93 percent of members rated continuing education as very important.

In the professional and personal development main study, IT workers surveyed were given a list of thirteen **aspects of life** that incorporated work, home and leisure pursuits to denote the level of importance of each. Silicon Valley respondents awarded the highest level of importance to being financially comfortable, and being successful at work. There was also a level of importance assigned to home aspects of life: having a compatible relationship and a happy family life. Leisure aspects of life scored lowest with Silicon Valley respondents.

Dublin respondents reported the highest level of importance to be placed on home aspects of life: having a happy family life and compatible relationship. This was followed by leisure aspects of life: having satisfying friendships, and the lowest aspects of life were assigned to work: being financially comfortable.

Surveys of different grades of US workers conducted over the 1970s and 1980s by the Opinion Research Corporation (Schiemann: 1983) show that all workers place a high value on material needs. 'Pay and benefits' is ranked number one by managers, clerical and hourly workers, and number two by professional workers. Career advancement, challenging work and supervision were found to be of great importance as workers moved up the occupational hierarchy. 'Advancement' was ranked as number one by professional workers, and as number two by managers and clerical workers. 'Security' was found to be ranked at number two for hourly workers but was not referred to by professionals or managers. **The findings of the main study that Silicon Valley respondents awarded the highest level of importance to being financially comfortable and being successful at work, is in line with existing research.**

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With regard to IT workers' priorities in Silicon Valley, the pressure on workers to work twenty-four hours, seven days a week means that the elements of fun, leisure activities and family time are seriously neglected (Cohen: (2002), and this in turn produces work-obsessed technocrats who have no time for relationship and family life (Rogers and Larsen: 1984; Hollands: 1985; Hayes: 1989). The findings of the main study indicate that Silicon Valley respondents placed greatest emphasis on work aspects of life. This tends to concur with existing research.

6.12.0 Work-Life Balance

The research question under discussion sets **to investigate the level of work-life balance for IT workers in the Republic of Ireland and the United States.**

In the professional and personal development main study, **Dublin respondents reported that the importance of promoting work-life balance policies to their workplace is high, whereas Silicon Valley respondents reported that this was of average importance. Introducing unpaid leave during family crisis was reported to be of high importance by both sets of respondents.**

According to Collard and Gelatt (2000) the elements that denote quality of life are security and contentment in the areas of finance, family, health, career advancement and success, and peer admiration. A quality life may have the ingredients of having time for reflection, for a partner, for a family, for socialising, for hobbies, and for a spiritual life. Existing research states that family and personal issues impinge a great deal on work (Bond, Galinsky and Swanberg: 1998; Johnson: 1999; Marks, Scholarios et al; 2001). Thus it is of benefit to both workers and companies that work-life balance policies are introduced. According to O'Donoghue (2001), Ireland and the European Union have begun to introduce family-friendly policies in the workplace, such as flexible leave arrangements, compassionate leave in time of crisis, paternity leave, and extended maternity leave, mainly in public sector and multi-national companies.

The high level of importance attributed to the promotion of work-life balance among Dublin respondents may be influenced by EU polices on work-life balance already introduced into some Irish workplaces, but may also be due to the high value

placed on home aspects of life as reported in this survey: having a happy family life and compatible relationship.

Silicon Valley respondents reported the introduction of **telecommuting** to the workplace is of high importance, while Dublin respondents reported that this was of average importance. In the Republic of Ireland, reports produced by the Department of Public Enterprises (2000) and the Irish Business and Employers Confederation (IBEC: 2000), stated that 'teleworking' or 'eWork' is still not common in the Republic of Ireland though several larger firms have embarked on it. However, the report also states that more and more employers are now investigating the introduction of formal eworking initiatives as a flexible work option, particularly for employees with caring responsibilities or those who have to commute long distances.

All other work-life policies surveyed (crèche facilities, encouragement of further academic training, promotion based on seniority, job sharing, extended maternity leave, paternity leave, and funded counselling) were rated as low or average in terms of importance by both Dublin and Silicon Valley respondents.

6.15.0 Work Environment

The research question under discussion sets out **to investigate how IT workers perceive their work environment in the Republic of Ireland and the United States.**

In the trade union pilot study, respondents were asked to describe their work environment. **Results from the pilot study suggest that the work environment is most problematic in Silicon Valley, as eight (44.4%) of respondent's statements fell into this category.** Only three Dublin non-union respondents (17.6%) and two (14.3%) of Dublin union respondents reported their environment as problematic.

A large percentage of Dublin non-union respondents (41.2%) reported that their work environment was good. For Dublin union respondents the most popular label for the work environment was fair (42.9%), followed by good (35.7%). Only three (16.7%) of Silicon Valley respondents described their work environment as good.

Research has reported much worker dissatisfaction in the IT work environment in the US (Cusumano and Selby: 1996), and the ensuing worker burnout that often occurs due to pressure and long hours required (Cohen:2000; Rogers and Larson: 1984; Kidder:

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1981: Shapero: 1985). The Silicon Valley pilot study results correlate with the above research findings, whereas the results of both Dublin groups do not. This suggests that the typical pressures and stresses of work in the IT sector in the US have not infiltrated Ireland's IT work environment to the same extent as in Silicon Valley.

In the professional and personal development main study, the majority of respondents from both locations described their work environment in ways that fell into two contradictory groups: stressful, pressurised, competitive, authoritative and critical; team-orientated, people-orientated, supportive, competitive, flexible, with having good core values. The majority of respondents from both locations reported that their work environment **did not promote work-life balance or creativity**, and stated that it was **not relaxed**. Silicon Valley respondents also described work as appreciative, while Dublin respondents were divided on this issue. Results for describing work environment therefore appear to be somewhat contradictory and ambiguous, for example with 'supportive' and 'critical' being used by the majority of respondents to describe their work situation.

With regard to describing the IT work environment as **stressful, pressurised or competitive,** Kidder (1981) states that burnout and emotional overload frequently occur among IT workers due to impossible workloads and deadlines, and the fear of not being promoted. Cohen (2002) blames America's twenty-four hour-seven day a week work schedule as the main reason why technology workers become stressed. Rogers and Larson (1984) state that workdays are so intense that often workers find it hard to sleep in case they miss a deadline. Bernstein (1977) also states that workers in the semiconductor industry have to face dangerous health and safety conditions, as well as constant cycles of hiring and firing, and stressful and pressured jobs in unorganised work places.

With regard to describing the IT work environment as being **authoritative and critical,** Ludeman (1989) states that criticism brings a lack of motivation and performance to staff. According to Hollands (1985), the pressures of the job, as well as the professional technology training, creates a logical, efficient, precise and critical person who has learned to be unexpressive, unemotional and to bottle up his or her feelings at all costs.

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With regard to describing the IT work environment as **team-orientated, people-orientated, and supportive,** Cloke and Goldsmith (1997) identified fourteen values that can be implemented to humanise and empower organisations, including inclusion: helping every person to feel they belong; collaboration: building partnerships where people may work together to achieve a common goal; teams and networks: creating small work-teams of four or five people who can support and empower each other, and self-direct and self-manage their own project. Thus, the descriptions of their work environment as being team-orientated, people-orientated, and supportive is indicative, according to Cloke and Goldsmith (1997), of humanised and empowering organisations.

With regard to describing the IT work environment as having **good core values,** Seaman (1999) states that the core values of the firm must also align with the workers' core values. A major problem here is that the company's stated values are often the values what the company ought to have, but in reality these values do not exist. Mitroff and Denton (1999) identified five distinct models as to how spirituality and values can be practiced in the workplace. The fifth model is the values-based organisation that derives from the personal values of its founders that they believe in intensely and wish to carry forward, including family and general values.

With regard to describing the IT work environment as being **flexible,** Levering (1988) states that in order to maximise individual responsibility for how the job is done, workers should have flexible working hours. Osterman (1995) and Barling (1994) state that the recent interest in work-life balance has promoted the idea that employers should do more to enhance flexibility. Kirchmeyer (1995) agrees that flexible schedules and alternative work arrangements such as teleworking would be expected to help individuals manage their work-nonwork boundary and reduce potential conflict between the two domains.

6.14.0 Needs Met by Employment

The research question under discussion sets out **to investigate the extent to which IT workers needs are met by current employment in the Republic of Ireland and the United States.**

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In the professional and personal development main study, with regard to the **needs most met by current employment**, results for Silicon Valley respondents correspond very closely with those of Dublin respondents. Silicon Valley respondents chose financial security (mean: 69.5) as the need that is most met by current employment, followed by a sense of belonging (mean: 50.75), a feeling of contributing (mean: 50.25), and a sense of achievement (mean: 49.75). Dublin respondents also chose financial security (mean: 60.88) as the need that is most met by current employment, followed by a sense of belonging (mean: 53.38), a feeling of contributing (mean: 52.65), and a sense of achievement (mean: 49.79).

The findings of this survey that financial security is the most important need for IT workers surveyed that is met by employment is in line with surveys of different grades of US workers conducted over the 1970s and 1980s by the Opinion Research Corporation (Schiemann: 1983). These surveys found that all workers place a high value on material needs. 'Pay and benefits' was found to be ranked number one by managers, clerical and hourly workers, and number two by professional workers.

6.15.0 Length of Employment

The research question under discussion set out **to ascertain the length of employment favoured by IT workers in the Republic of Ireland and the United States.**

In the professional and personal development main study, results for **length of time in current employment** indicate that Dublin respondents (with a mean of 7.66 years) are employed for longer periods of time compared to Silicon Valley respondents (with a mean of 6.1 years employed).

Results for **length of time in last employment** indicate that Dublin respondents (with a mean of 2.61 years) were employed for longer periods of time in their last employment compared to Silicon Valley respondents (with a mean of 1.63 years employed).

Results for the **optimum length of time in employment** indicate that both Dublin respondents (with a mean of 5.59 years) and Silicon Valley respondents (with a mean of 5.85 years employed) prefer length of employment to be between 4 and 10 years.

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According to existing research there are a number of factors that may influence IT workers length of employment. Job security is one of the most important factors for any worker (Kanter: 1978; Levering: 1988; Kochan and McKersie: 1986). Job security also largely contributes to quality of one's life (Piotrkowski: 1979, and Staines & Pleck: 1983). However, due to the constantly changing technologies that IT workers have to contend with, there is a real fear of obsolescence if their skills are not continually updated (Kotter: 1995; Chudwin and Durrant: 1981; Dublin: 1972; Shapero (1985); Cascio: 2000). Research conducted by Oberg (1960) indicates that age is another factor that may contribute to obsolescence. IT workers are likely to change employers many times over (Friedman: 2003). The high-tech industry as highly volatile and insecure, particularly in the area of employment where workers and managers are routinely laid off or terminated (Hayes: 1989).

Existing research therefore indicates that there is a great deal of job insecurity among IT workers. It is therefore surprising that both Dublin and Silicon Valley respondents for this survey reported that they have been employed for an average of 7.66 and 6.1 percent respectively. Results for the optimum time employed in the same job was reported as being similar by respondents from both locations: Dublin (5.59 percent), Silicon Valley (5.85 percent). Factors which may also influence whether a worker seeks new employment include the degree of training received in the workplace, and the innovation of technology being worked on since obsolescence is a major reality for the IT worker.

Existing research also stresses that there is a lack of loyalty in the postmodern workplace due to the degree of downsizing and layoffs that habitually occur (Cascio: 2000). Many companies offer short to long term contracts to workers as permanet or lifelong jobs have become extinct (Hall and Mirvis: 1995; Reingold: 1999). **Thus the period of five to six years that IT workers in both locations state as being their optimum length of employment appears to be in line with industry trends.**

6.16.0 Trade Union Membership

The research question under discussion set out **to establish trade union membership levels amongst IT workers in the Republic of Ireland and the United States.**

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The trade union pilot study received no data from any IT union members in Silicon Valley, therefore indicating a strong absence of union membership among IT workers in Silicon Valley, California, USA. The non-union policy of many IT companies in the US has been well documented in the literature review. Since the 1960s it has become socially and politically acceptable for management in the US to embrace a union-free ideology (Kochan and McKersie: 1986; Freedman: 1985; Goldfield: 1989; Kochan, Katz and McKersie: 1994). Technological advances brought a greater need for highly skilled white collar workers who were traditionally non-union (Watson: 1961; Aronson: 1985; Hyman: 1999). IT firms and aviation companies have always been anti-union (Kochan and Mckersie: 1986; Bernstein: 1977; Jackson: 1997; McLoughlin and Gourley: 1994; Dunlop: 1988). The pattern of union decline in the US mirrors the cultural shift towards individualism in community-based and religious organisations (Putnum: 2000; Bellah et al: 1991). Therefore the failure to locate IT unionised companies in Silicon Valley concurs with existing research which has frequently documented the lack of union membership in the IT sector.

In the trade union pilot study, data was received from IT workers who were union members in the Dublin survey. IT worker union membership in the Republic of Ireland largely comprises of firms who were semi-state bodies that have now largely been privatised, but where technical workers remain members of their trade union. The Dublin firms surveyed in the trade union pilot study were semi-state organisations and therefore had a tradition of union membership. This undoubtedly offset the more common non-union membership level of IT workers.

In the professional and personal development main study, 20.6 percent of Dublin respondents reported that in the case of problems at work a union would represent them. Although the Irish IT sector is heavily reliant on American IT firms for employment (Gallen: 2001), the fact that Irish trade unions still have negotiating arrangements with the government and employers for fixed programmes of pay rises (Duffy: 2000), may somewhat offset the decline in collectivism as experienced in the US. Also, the development of the Irish IT industry in the 1990s has been aided by, among other factors, the trade union movement (Browne: 1995; Duffy: 2000).

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No IT worker in Silicon Valley reported that they would have union representation if a problem occurred at work. **Therefore results from both studies indicate that union membership in the IT sector in the US is non-existence, and is mainly confined to former semi-state bodies in Ireland.**

6.17.0 Worker Representation

The research question under discussion set out **to ascertain the type and degree of worker representation in the workplace for non-trade union workers in the IT sector in the Republic of Ireland and the United States.**

In the professional and personal development main study, responses to the question of worker representation varied greatly between both locations, although the majority of both Silicon Valley (70 percent) respondents and Dublin (32.4 percent) respondents reported that they would represent themselves if there was a problem at work. In Silicon Valley, no respondent reported being represented by a union, whereas 20.6 percent of Dublin respondents reported that they would have union representation.

The move away from collectivism towards individualism in the workplace in western nations has been well documented (Mosca: 1939; Bellah et al: 1991; Putnam: 2000). The IT industry has been particularly marked as a white-collar non-unionised individualistic industry. It is argued that collectivism and workers' solidarity is much more likely to exist in traditionally blue-collar unionised industries, than in sectors such as IT which employs mainly professional highly skilled workers. Individualism is also a feature of the postmodern era, with its emphasis on technological advancement and ideas but also its inability to develop intimate relationships (Smart: 1992). According to Macionis (1999), postmodernism reflects alienation, loss of identity, break-up of communities and social diversity. Thus results for this thesis found a majority of self-representation to exist among Silicon Valley and Dublin IT respondents which is line with existing research.

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6.18.0 Staff Association

The research question under discussion set out to **ascertain the level of staff association membership in IT trade union and non-trade union firms in the Republic of Ireland and in the United States.**

There was a very low response for membership of staff associations in the work place among Silicon Valley non-union (0%) and Dublin non-union (23.5%) respondents. The concept of a staff association seems to be unknown to Silicon Valley non-union respondents. It may also reflect American individualism and hence workers reluctance to join organisations (Bellah et al: 1991; Putnum: 2000).

Dublin union respondents however reported that 35.7 percent were members of staff associations. The higher level of staff association membership among IT Dublin union respondents is interesting to note, and may indicate more of a propensity for union members to join staff associations than non-union members.

The benefits of staff association membership for Dublin respondents was very low. Dublin non-union respondents reported benefits in just 5.9 percent of cases, while 7.1 percent of Dublin union respondents reported benefits. On the question of whether staff associations promoted professional development, there were no positive responses among either Silicon Valley non-union, Dublin non-union, or Dublin union respondents. **Overall from the trade union pilot study results it appears that staff associations are not considered, even by members, as being of any benefit to workers.**

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7.0.0 Conclusions

7.1.0 Introduction

In this section the main findings of the research from both studies: the comparative trade union pilot study in Silicon Valley, California, USA, and Dublin, Ireland, and the comparative professional and personal development main study in Silicon Valley, California, USA, and in Dublin, Ireland are summarised. Research findings that support existing research are indicated, and research findings that contradict existing research are highlighted. The strengths and limitations of the methodology used are stated. Areas for future research are also indicated.

7.2.0 Main Findings of Research

The main findings of both the trade union pilot study and the professional and personal development main study are summarised in this section.

7.2.1 Gender

With regard to gender, the research question set out to establish the degree of gender division among workers in the IT sector in the Republic of Ireland and the United States. The results of both the trade union pilot study and the professional and personal development main study show that a large majority of IT workers are male. These results concur with existing research which states that fewer females are employed in the professional and higher-paid sectors of IT than males in both the US (Webster: 1996; Kirkup and Keller: 1992; Hoyles: 1988; Rees, cited by Ducatel: 1994; NSF: 2000; Zierdt-Warshaw et al: 2000; Lockburn and Ormrod: 1993), and Ireland (Barry: 1999; Barry and Brunt: 2002).

7.2.2 Level of Education

With regard to level of education, the research question set out to establish the level of education of IT workers in the Republic of Ireland and the United States. From the results of both studies it emerged that a third-level degree is the standard for a career in IT in both Silicon Valley and Dublin, with postgraduate qualifications being quite common

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among IT workers in both locations. Results for a high level of education among IT workers is in line with existing research (National Center for Education Statistics: 1998). In all categories across both studies it was found that Silicon Valley respondents have gained more postgraduate degrees than Dublin respondents. These results concur with existing research where in the US the IT sector has pushed the demand for professional higher education to well beyond a batchelor's degree (Kohl: 1998; Lynton: 1984; Carnevale: 1991), and where lifelong learning has become a necessary part of the professional worker's life in order to avoid obsolescence (Chadwin and Durrant: 1981; Dillman, Christenson, Slant, and Warner: 1995).

7.2.3 Professional Development Plan

With regard to having a professional development plan, the research question set out to ascertain the degree to which IT workers have a professional development plan in place in the Republic of Ireland and the United States. The results of the trade union pilot study as to the level of importance of IT workers having a professional development plan are mixed, with a majority of Dublin union IT workers stating that they had a professional development plan, while both groups of non-union IT workers in Dublin and Silicon Valley show low levels of professional development planning. The latter results do not concur with existing research which states the importance for professional and technical workers of having a personal development plan (Broadwell and Sizeman-House: 1986; Chan: 1992).

7.2.4 Personal Development Plan

With regard to developing a personal development plan, the research question set out to ascertain the degree to which IT workers have a personal development plan in the Republic of Ireland and the United States. In the trade union pilot study IT respondents in Silicon Valley were found to have little interest in planning for personal development, whereas the majority of both union and non-union IT workers in Dublin reported having an interest in a personal development plan. Results of Dublin respondents that indicate an interest in establishing a personal development plan are in line with existing research

which advocates workers developing a personal plan (Broadwell and Sizeman-House: 1986; Handa: 1984; Cartwright et al: 1996; Salmon: 1985).

7.2.5 Knowledge Skill-base of IT Workers

With regard to knowledge skill-base of IT workers, the research question set out to ascertain the knowledge and skills level of IT workers in the Republic of Ireland and the United States. In the professional and personal development main study, there was a high level of variation found to occur in the level of IT skills that workers originally studied at college and now use in their work. There was also a high level of variation found in the type of skills currently used as part of IT workers' jobs in both Dublin and Silicon Valley. The results of the thesis concur with existing research which states that multiskilling is common among IT workers (Marks, Scholarios et al: 2001; Hall and Mirvis: 19950 and that IT workers need to continually update their skills (Kotter; 1995; Chan: 1992; Cascio: 2000; The British Computer Society; Institute of Electrical and Electronics Engineers; The Irish Computer Society), and clearly demonstrate that IT employees are using many diverse skills and technologies within their workplace.

7.2.6 Reskilling at Work

With regard to reskilling at work, the research question set out to ascertain how IT workers reskill in order to remain current in the rapidly changing technological industry in the Republic of Ireland and the United States. From the professional and personal development main study conducted, the results for methods of reskilling that employers favour for both locations are mentoring by fellow staff, followed by funding of external courses, and lastly on the job training. Results that favour mentoring concur with existing research (Horibe: 1999).

Results for current reskilling as favoured by IT workers show that both locations favour on the job training, followed by personal reading and research. These results for IT workers most often learning new skills on the job are in line with current research (Chan: 1992; Horibe: 1999; Broadwell and Sizeman-House: 1986; Cross, Lynton, Nowlen and Stern: 1981). Several researchers have also advocated personal research and

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reading trade journals to update skills (Horibe: 1999; Gaff et al: 1981; Perez and Pino: 1992; Shapero: 1985).

Future plans to research however show a slight difference between locations, where on the job training is favoured by Dublin respondents followed by personal research, whereas personal research is favoured by Silicon Valley respondents.

7.2.7 Training at Work

With regard to training at work, the research question set out to ascertain the level of training that IT workers receive from their employers in the Republic of Ireland and the United States. Results from both studies undertaken indicate that Dublin IT companies consider investment in worker's training to be of more value than do Silicon Valley companies. Results for poor levels of training in Silicon Valley concur with existing research which states that the responsibility for reskilling is largely in the hands of individual IT workers (Dublin: 1972: Kotter: 1995; Friedman: 2003).

7.2.8 Professional Computer Societies

With regard professional computer societies, the research question set out to establish the level of membership of professional computer societies in the Republic of Ireland and the United States. Membership of professional computer societies was poorly represented in both studies. Although professional computer organisations extol the benefits of membership (the IEEE, the IEE, the BCS, the ICS, the STC), IT workers do not require a licence to work and therefore do not need to become members of professional societies (Chan: 1992). Results therefore indicate that IT workers do not feel the need to be members of professional societies.

7.2.9 Time Spent at Work

With regard to time spent at work, the research question set to investigate the time spent at work by IT workers in the Republic of Ireland and the United States. In the trade union pilot study, Silicon Valley respondents reported working more hours than either Dublin non-union or Dublin union groups. In the professional and personal development main study, results for hours worked per week indicate that a large percentage of both Silicon

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Valley and Dublin respondents tend to work longer than a 40 hour week. However, a greater percentage of Silicon Valley respondents tend to work more than forty hours per week compared to Dublin respondents. The results of the trade union pilot study and the professional and personal development main study correlate with existing research, namely that Silicon Valley is synonymous with working long hours (Rogers and Larson: 1984; Hayes: 1989; Cohen: 2002; Kidder: 1981).

7.2.10 Quality of work-life

With regard to quality of work-life, the research question set out to investigate the quality of work life of IT workers in the Republic of Ireland and the United States. In the professional and personal development main study, there was a large variation in terms of the number of hours that respondents spent on various activities in both Dublin and Silicon Valley. Results however for the number hours spent on various activities indicate that Dublin respondents spend more time on hobbies/leisuretime/socialising, time spent with family, and time spent on fulfilling leisure pursuits, while in contrast, results for time spent at work indicate that Silicon Valley respondents spend more time at work than Dublin respondents. The fact that Silicon Valley respondents report spending a great deal of time at work is in line with research conducted in Silicon Valley by Rogers and Larson: 1984; Marks, Scholarios et al: 2001; Gouldner: 1961; Kunda: 1992.

With regard to time spent on training and academic pursuits, results show that quite a high percentage of Dublin and Silicon Valley respondents reported that they spent no time on academic pursuits. Results for time spent on academic results seem to be at variance with existing research which strongly indicates that professional workers need to cultivate lifelong learning in order to avoid obsolescence ((Kotter: 1995; Chudwin and Durrant: 1981; Dublin: 1972; Shapero (1985); Cascio: 2000), and to enhance career prospects (Dillman, Christenson, Slant and Warner: 1995; Cascio: 2000).

In the professional and personal development main study it was also found that Dublin respondents reported the highest level of importance to be placed on home aspects of life: having a happy family life and compatible relationship, followed by leisure aspects of life: having satisfying friendships, and the lowest aspects of life were assigned to work: being financially comfortable. In contrast, Silicon Valley respondents awarded

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the highest level of importance to being financially comfortable and being successful at work. Results obtained from Silicon Valley respondents as to quality of work-life are in line with existing research where workers place most value on material needs (Schiemann: 1983), and least on family and leisure time (Cohen: 2002; Rogers and Larsen: 1984; Hollands: 1985; Hayes: 1989), whereas Dublin respondents tend to place most importance on home aspects of life and leisuretime.

7.2.11 Work-Life Balance

With regard to work-life balance, the research question investigates the level of work-life balance for IT workers in the Republic of Ireland and the United States. In the professional and personal development main study, Dublin respondents reported that the importance of promoting work-life balance policies in their workplace is high, whereas Silicon Valley respondents reported that this was of average importance. Introducing unpaid leave during family crisis was reported to be of high importance by both sets of respondents, and Silicon Valley respondents reported the introduction of telecommuting to the workplace is of high importance. All other work-life policies surveyed (crèche facilities, encouragement of further academic training, promotion based on seniority, job sharing, extended maternity leave, paternity leave, and funded counselling) were rated as low or average in terms of importance by both Dublin and Silicon Valley respondents. The high level of importance attributed to the promotion of work-life balance among Dublin respondents may be influenced by EU polices on work-life balance already introduced into some Irish workplaces (O'Donoghue (2001).

7.2.12 Work Environment

With regard to work environment, the research question set out to investigate how IT workers perceive their work environment in the Republic of Ireland and the United States. Results from the trade union pilot study suggest that Silicon Valley respondents describe their work environment as problematic, whereas a large percentage of Dublin non-union respondents reported that their work environment was good. Results for Silicon Valley are in line with existing research which states that there is much worker

dissatisfaction in the IT work environment in the US (Cusumano and Selby: 1996; Cohen:2000; Rogers and Larson: 1984; Kidder: 1981: Shapero: 1985).

In the professional and personal development main study, results for describing work environment for both locations appear to be somewhat contradictory and ambiguous. Respondents from both locations described their work environment in ways that fell into two contradictory groups: stressful, pressurised, competitive, authoritative and critical; team-orientated, people-orientated, supportive, competitive, flexible, with having good core values.

7.2.13 Needs Met by Employment

With regard to needs met by employment, the research question set out to investigate the extent to which IT workers needs are met by current employment in the Republic of Ireland and the United States. In the professional and personal development main study, results for the needs most met by current employment for both Silicon Valley and Dublin respondents were financial security followed by a sense of belonging. The findings of this survey that financial security is the most important need for IT workers surveyed is in line with existing research which places material needs as being of paramount importance to workers (Schiemann: 1983).

7.2.14 Length of Employment

With regard to length of employment, the research question set out to ascertain the length of employment favoured by IT workers in the Republic of Ireland and the United States. In the professional and personal development main study, results for **length of time in current employment** indicate that Dublin respondents are employed for longer periods of time compared to Silicon Valley respondents. Results for **length of time in last employment** indicate that Dublin respondents were employed for longer periods of time in their last employment compared to Silicon Valley respondents. Results for the **optimum length of time in employment** indicate that both Dublin respondents and Silicon Valley respondents prefer length of employment to be between 4 and 10 years.

Existing research (Kotter: 1995; Chudwin and Durrant: 1981; Dublin: 1972; Shapero (1985); Cascio: 2000) indicates that there is a great deal of job insecurity among

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IT workers due to company downsizing and layoffs. It is therefore surprising that both Dublin and Silicon Valley respondents for this survey reported that they have been employed for an average of 7.66 and 6.1 percent respectively as existing research indicates a shorter term of employment in the IT sector.

7.2.15 Trade Union Membership

With regard to trade union membership, the research question set out to establish trade union membership levels amongst IT workers in the Republic of Ireland and the United States. The trade union pilot study received no data from any IT union members in Silicon Valley, therefore indicating a strong absence of union membership among IT workers in Silicon Valley, California, USA. This finding concurs with existing literature as to the non-union policy of many IT companies in the US (Kochan and McKersie: 1986; Freedman: 1985; Goldfield: 1989; Kochan, Katz and McKersie: 1994; Watson: 1961; Aronson: 1985; Hyman: 1999; Bernstein: 1977; Jackson: 1997; McLoughlin and Gourley: 1994; Dunlop: 1988).

In the trade union pilot study, data was received from IT workers who were union members in the Dublin survey but IT worker union membership in the Republic of Ireland largely comprises of firms who were semi-state bodies that have now largely been privatised. In the professional and personal development main study, 20.6 percent of Dublin respondents reported that in the case of problems at work a union would represent them. However, no IT worker in Silicon Valley reported that they would have union representation if a problem occurred at work. Therefore results from both studies indicate that union membership in the IT sector in the US is non-existence, and is mainly confined to former semi-state bodies in Ireland.

7.2.16 Worker Representation

With regard to worker representation, the research question set out to ascertain the type and degree of worker representation in the workplace for non-trade union workers in the IT sector in the Republic of Ireland and the United States. In the professional and personal development main study, responses to the question of worker representation varied greatly between both locations, although the majority of both Silicon Valley and

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Dublin respondents reported that they would represent themselves if there was a problem at work. Results are therefore in line with existing research which states that collectivism is largely on the decline in this postmodern era (Mosca: 1939; Bellah et al: 1991; Putnam: 2000; Macionis: 1999).

7.2.17 Staff Association

With regard to staff association, the research question set out to ascertain the level of staff association membership in IT trade union and non-trade union firms in the Republic of Ireland and in the United States. Results indicate that there is a very low response for membership of staff associations in the work place among Silicon Valley non-union and Dublin non-union respondents. Results thus appear to concur with existing research that stresses workers reluctance to join organisations (Bellah et al: 1991; Putnum: 2000).

7.3.0 Findings In Support of Existing Research

The trend in existing literature that states that there is currently a move away from collectivism towards **individualism** in the workplace in western nations (Mosca: 1939; Bellah et al: 1991; Putnam: 2000) is well borne out by the thesis findings. The IT industry has been particularly marked as a white-collar non-unionised individualistic industry, and thesis results agree with this trend in terms of lack of membership of trade unions, staff associations and professional societies, and the trend towards self-representation in the workplace. Findings also concur with the premise that individualism is a feature of the postmodern era, with its emphasis on technological advancement and ideas but also its inability to develop intimate relationships (Smart: 1992) and promote quality of life. The postmodern world also espouses subjective truth and reality (Cheney: 1995), but this philosophy appears to be leading towards fragmentation, social complexity, specialisation and meaninglessness (Smart: 1992), alienation, loss of identity, break-up of communities and social diversity (Macionis: 1999). Findings also support the premise that, although there have been great developmental strides in the areas of science and technology, many workers have experienced a deterioration in working conditions, such as longer working hours, greater job insecurity and risk of unemployment (Smart: 1992).

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In the area of **gender**, the results of both the trade union pilot study and the professional and personal development main study show that a large majority of IT workers are male which is in line with existing research (Webster: 1996; Kirkup and Keller: 1992; Hoyles: 1988; Rees, cited by Ducatel: 1994; NSF: 2000; Zierdt-Warshaw et al: 2000; Lockburn and Ormrod: 1993; Barry: 1999; Barry and Brunt: 2002). Results for **level of education** indicate a high level of education among IT workers which is in line with existing research (National Center for Education Statistics: 1998).

Results for **knowledge and skill base** of IT workers concur with existing research which states that multiskilling is common among IT workers (Marks, Scholarios et al: 2001; Hall and Mirvis: 1995) and that IT workers need to continually update their skills (Kotter; 1995; Chan: 1992; Cascio: 2000; The British Computer Society; Institute of Electrical and Electronics Engineers; The Irish Computer Society). Results for **reskilling at work** shows that respondents from both locations favour mentoring which concurs with existing research (Horibe: 1999). Results for IT workers most often learning new skills on the job are in line with current research (Chan: 1992; Horibe: 1999; Broadwell and Sizeman-House: 1986; Cross, Lynton, Nowlen and Stern: 1981), while results for learning skills through personal research and reading also concur with existing research (Horibe: 1999; Gaff et al: 1981; Perez and Pino: 1992; Shapero: 1985). Results for poor **levels of training** in Silicon Valley concur with existing research which states that the responsibility for reskilling is largely in the hands of individual IT workers (Dublin: 1972: Kotter: 1995; Friedman: 2003), while Dublin employers seem to invest more in workers' training.

Results for membership of **professional computer societies** indicate that IT workers do not feel the need to be members of professional societies (Chan: 1992). The results of both studies for **time spent at work** correlate with existing research, namely that Silicon Valley is synonymous with working long hours (Rogers and Larson: 1984; Hayes: 1989; Cohen: 2002; Kidder: 1981), while Dublin IT respondents tend to work less hours than do Silicon Valley respondents

Results obtained from Silicon Valley respondents as to **quality of work-life** are in line with existing research where workers place most value on material needs (Schiemann: 1983), and least on family and leisure time (Cohen: 2002; Rogers and

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Larsen: 1984; Hollands: 1985; Hayes: 1989), whereas Dublin respondents tend to place most importance on home aspects of life and leisuretime.

Results for the importance of introducing various **work-life balance policies** in the workplace indicate that Silicon Valley workers place the highest importance on introducing unpaid leave during family crisis, and telecommuting. Dublin respondents also place a high level of importance on introducing unpaid leave during family crisis, but also on the promotion of work-life balance at work, which may be influenced by EU polices on work-life balance already introduced into some Irish workplaces (O'Donoghue (2001).

Results from the trade union pilot study suggest that the **work environment** is most problematic in Silicon Valley, whereas a large percentage of Dublin non-union respondents reported that their work environment was good. Results for Silicon Valley are in line with existing research (Cusumano and Selby: 1996; Cohen:2000; Rogers and Larson: 1984; Kidder: 1981: Shapero: 1985). The findings of this survey that financial security is the most important **need for IT workers filled by employment** surveyed is in line with existing research which places material needs as being of paramount importance to workers (Schiemann: 1983).

With regard to **trade union membership** among IT workers, the trade union pilot study received no data from any IT union members in Silicon Valley. This indicates a strong absence of union membership among IT workers in Silicon Valley, California, USA which concurs with existing literature as to the non-union policy of many IT companies in the US (Kochan and McKersie: 1986; Freedman: 1985; Goldfield: 1989; Kochan, Katz and McKersie: 1994; Watson: 1961; Aronson: 1985; Hyman: 1999; Bernstein: 1977; Jackson: 1997; McLoughlin and Gourley: 1994; Dunlop: 1988). With regard to **worker representation**, results from the professional and personal development main study are in line with existing research which states that individualism is rife and collectivism is largely on the decline (Mosca: 1939; Bellah et al: 1991; Putnam: 2000). Results for **staff association membership** also concur with existing research that stresses workers reluctance to join organisations (Bellah et al: 1991; Putnum: 2000).

The comparative study undertaken between the IT workers of Dublin, Ireland, and Silicon Valley, California, USA, brought up some interesting results that were laregely in line with existing research. The IT industry developed in the US from the 1950s onwards and spread its 'Americanised values' and industrial relations policies globally. In Ireland the introduction of various government programmes in the 1980s successfully attracted American IT industries (Gallen: 2001). In contrast to the US, the development of the Irish IT industry in the 1990s has been aided by, among other factors, the trade union movement (Browne: 1995; Duffy: 2000). This may be a factor in softening working conditions for IT employees in Dublin, Ireland, and for somewhat stemming the tide against individualism and excessive work hours that is so prevalent in Silicon Valley. It may also explain to some extent why IT workers in Dublin, Ireland were found to be more likely than Silicon Valley IT workers to be members of trade unions, to receive more training from their employers, to work less hours, and to place most importance on home aspects of life and leisuretime than on work aspects of life.

7.4.0 Findings In Contradiction of Existing Research

Results for the trade union pilot study as to the importance of IT workers having a **professional development plan** for the groups of non-union IT workers in Dublin and Silicon Valley show low levels of professional development planning, while results for union workers in Dublin indicate that the majority has a development plan. The non-union results in both locations therefore do not concur with existing research which states the importance for professional and technical workers of having a personal development plan (Broadwell and Sizeman-House: 1986; Chan: 1992).

Results for workers of having a **personal development plan** indicate that Silicon Valley respondents have little interest in developing a plan, whereas Dublin union and non-union respondents indicate an interest in developing a plan. Thus, Silicon Valley respondents' results are not in line with existing research which advocates workers developing a personal plan (Broadwell and Sizeman-House: 1986; Handa: 1984; Cartwright et al: 1996; Salmon: 1985).

With regard to **time spent in employment**, it is surprising that both Dublin and Silicon Valley respondents for this survey reported that they have been employed for an

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average of 7.66 and 6.1 percent respectively as existing research indicates a shorter term of employment in the IT sector(Kotter: 1995; Chudwin and Durrant: 1981; Dublin: 1972; Shapero (1985); Cascio: 2000).

7.5.0 Ambiguous Findings

In the area of **description of work environment**, results for describing work environment varied greatly between studies and between locations. Results from the trade union pilot study suggest that Silicon Valley respondents describe their work environment as problematic, which concurs with existing research (Cusumano and Selby: 1996; Cohen:2000; Rogers and Larson: 1984; Kidder: 1981: Shapero: 1985), whereas a large percentage of Dublin non-union respondents reported that their work environment was good. In the professional and personal development main study, results for describing work environment for both locations appear to be somewhat contradictory and ambiguous. Respondents from both locations described their work environment in ways that fell into two contradictory groups: stressful, pressurised, competitive, authoritative and critical; team-orientated, people-orientated, supportive, competitive, flexible, and having good core values.

7.6.0 Strengths of Methodology

The methodology for the trade union pilot study and for the professional and personal development main study was the classical positivistic design. Data was collected using the survey method, and statistics were then generated from respondent's data. One of the main strengths of the methodology was that it generated a lot of **quantitative data** using the survey method.

The survey method allowed questionnaires to be emailed to IT companies in Dublin, Ireland, and in Silicon Valley, California, United States which had been randomly selected. Since financial outlay was a factor in deciding on methodology, the survey method **reduced both cost and time** in sending a large number of questionnaires to IT firms. It was also less time-consuming and less expensive for firms to pass on questionnaires to their employees, and for recipients to return questionnaires using email.

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7.7.0 Limitations of Methodology

There were several limitations encountered due to the methodology used. Firstly, the rate of return of questionnaires was quite low. This may have been due to the reluctance of IT companies to email surveys to their workers, or may have also been due to workers' lack of interest in returning the survey.

In the case of the trade union pilot study, no survey was returned by union workers surveyed in Silicon Valley, California, United States. Since existing literature states that there is a strong non-union policy in many IT companies in the US (Kochan and McKersie: 1986; Freedman: 1985; Goldfield: 1989; Kochan, Katz and McKersie: 1994; Watson: 1961; Aronson: 1985; Hyman: 1999; Bernstein: 1977; Jackson: 1997; McLoughlin and Gourley: 1994; Dunlop: 1988), it would seem that firms that were anti-union would not be inclined to survey their workers regarding trade union membership. Therefore the survey instrument may not have been the best method of generating trade union data in the IT sector.

Due to a lack of both finances and time when conducting the research, the methodology was limited to using the survey instrument, and to surveying a small percentage of those IT firms randomly selected in the databases used. A follow-up study which had more finances and time available could perhaps use the interview method or the case study method to generate a higher quality of quantitative data and also to generate qualitative data.

It should also be noted that results of the trade union pilot study may be limited in terms of reliability, due to the small sample of IT workers surveyed, and the lack of randomness of the firms selected for survey.

7.8.0 Recommendations Based on Research Findings

In the area of **gender**, both studies found a lack of females working at the professional and higher-paid sections of the IT industry. It is important that governments work with educators to encourage more females to gain qualifications in IT subjects and hence to gain employment at higher levels in the IT sector.

In the area of **knowledge and skill base** of IT workers, it was found that multiskilling is common among IT workers and that IT workers need to continually

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update their skills. Therefore lifelong learning is of major importance to IT workers to insure employability, and it is the prerogative of educators to insure that relevant and flexible courses are available for IT workers to pursue.

The studies undertaken also highlighted the fact that **reskilling at work** as provided by employers does not usually include formal courses. IT workers most often reported learning new skills on the job, and through personal research and reading. Poor levels of training at work were found to occur among Silicon Valley respondents. It is therefore recommended that governments offer employers in the IT sectors incentives to provide their workers with adequate continuous training to keep their skill levels current.

In the areas of **quality of work-life and work-life balance**, the findings that emerged from the studies indicate that Silicon Valley IT workers spend long hours each week at work, and place most emphasis on material needs and least on family and leisure. These findings are of interest to government departments who are responsible for promoting work-life balance, to IT employers who set the expectations for the average working week but also need to monitor the effects of overwork and burnout on their staff, and for IT workers who seek to find a balance between time spent at work, with family and at leisure.

7.9.0 Areas for Further Research

In the area of **professional and personal development plans** the low results for non-union workers in both Dublin, Ireland and Silicon Valley, California, United States, having either plan in place does not concur with existing research (Broadwell and Sizeman-House: 1986; Chan: 1992; Handa: 1984; Cartwright et al: 1996; Salmon: 1985). In light of the fear of obsolescence (Kotter: 1995; Dublin: 1972; Shapero: 1985; Cascio: 2000) that IT workers face when they do not have a professional development plan, and the problems that may ensue where there is no effort made to balance work, home, and leisure life (Collard and Gelatt: 2000; Bond, Galinsky and Swanberg: 1998; Johnson: 1999; Marks, Scholarios et al; 2001; O'Donoghue: 2001), it would appear that further research in this area would be of importance to IT workers, IT employers, educators and to government bodies that develop work-life balance and quality of life policies.

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The area of **time spent in employment** for IT workers is also worthy of further study. Results from the trade union study in both Dublin and Silicon Valley indicated that respondents are employed for quite long periods of time (an average of 7.66 years for Dublin and 6.1 years for Silicon Valley). Existing research however indicates that a shorter term of employment is the norm for IT workers due to downsizing, layoffs, and short-term contracts (Kotter: 1995; Chudwin and Durrant: 1981; Dublin: 1972; Shapero (1985); Cascio: 2000). Therefore further research into length of employment of IT workers would be of benefit to IT workers, IT employers, trade unions, and educators.

The **description of work environment** as surveyed among IT workers showed great variance in results between studies and between locations. Trade union pilot study results suggest that Silicon Valley respondents describe their work environment as problematic, which concurs with existing research (Cusumano and Selby: 1996; Cohen:2000; Rogers and Larson: 1984; Kidder: 1981: Shapero: 1985), whereas a large percentage of Dublin non-union respondents reported that their work environment was good. In the professional and personal development main study, results for describing work environment for both locations were contradictory and ambiguous. Therefore further research as to workers description of their work environment is necessary to ascertain their level of satisfaction with various aspects of their work life. Case studies and interview may be a more suitable method than the survey method to collect both qualitative and quantitative data. Further research in work environment description would be of value to IT workers, IT employers, trade unions, and to government bodies that develop work-life balance and quality of life policies.

The lack of collectivism indicated across both studies and in both locations is very worthy of further research. The low levels of membership of IT workers of professional computer societies, staff associations and trade unions is in line with current research which stresses the postmodern trend towards individualism in all aspects of life and culture ((Mosca: 1939; Bellah et al: 1991; Putnam: 2000). Further research in this area would be of benefit to IT workers, IT employers, professional computer societies, staff associations, trade unions, and educators.

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Appendix A

Interview with Seamus Gallen

Deputy Director of National Informatics Directorate

Strand Road, Sandymount, Dublin 4: Feb 14th 2002, 3pm

Could you tell me something about your background?

I started with Aer Lingus in the clerical department. I got into computing on the basis of aptitude. I was trained by IBM – they were an Aer Lingus supplier. Then I went with CARA, a company set up by Aer Lingus. I worked as a Cobol programmer. Then I joined the IDA as their DP manager for six years. That led to getting involved with the software directorate.

What is your current position?

Deputy-director.

Can you tell me something about National Informatics?

It was set up in '91. As a result of industry pressure from the '80s, a study of the industry was done in '87, published in '89 by the department and the IDA on the software industry. The study recommended that a number of things be done to forward the industry. Michael Smith was Minister for Industry at the time. There was a half million allocated to it. We were established to do a number of things. To build up infrastructure for the industry, to set up a database as to who is who in the industry – how many companies, how many employees, exports, imports, where they are, amount spent on R and D, amount spent on training. We started to work on venture capital for the software industry. We got a good fund set up in '96. 50% was public money and 50% was provided by the private sector. This was independently managed by the ICC Bank. We worked with the Trade Board, setting up trade missions to places. Local companies would be informed if similar companies were coming in from Boston, etc. We tried to help them build up contacts.

Did you encourage them to adopt any quality standards?

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We felt that the Irish software industry should be distinguished in some way. We set up training in ISO9001 and in the CMI model. We thought them what documentation they had to have, so that all employees would have a list of what they had to do. We part funded the courses. DCU ran a series of groups, a quality managers' forum was set up. They would meet every month and discuss their problems. For companies who wanted certification in ISO some state money was made available to pay for consultants. We have a very high rate of certification in world terms. The US never bothered very much. They are the standard setters and the largest market. Standards are more important in the EU. Many EU firms put it into their tendering that firms have to have these standards. US companies have the Carnegie-Mellon maturity model – whether you have processes, documentation, error-procedures, management version control. A lot of companies go for this – Ericsson, Motorola. CSE has figures for this.

How do you define software industry?

There was a set of criteria – developing software had to be part of their activity. There are about 130 foreign companies and 700+ Irish companies. 70% have 10 or less employed. Only a few hundred are important in terms of size. I can send you any figures you need. Give me your email address.

Is the Irish education system good enough to produce top IT people to fill skills shortage?

In 1990 I started work in this area. It looked like we wouldn't have enough people. In '95 there was a huge shortage, particularly in development. You need to constantly update your skills. For some the skills were out of date. A lot of people in the US were put out of their jobs in the '80s because they hadn't the new skills. In the Republic of Ireland though most companies train employees to update their skills – in learning languages like Java. At the moment we're in a situation where there isn't the same shortage as was the case a few years ago. But this downturn will take about two years to run. Then we'll be back to the same shortage. We're short about 3,000 employees every year in the Republic of Ireland. These were being filled by people from abroad, mainly the EU, a lot of Eastern Europeans – from Latvia, the Ukraine, Russia, Hungary, and Czechoslovakia.

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These have very good skills because there was a huge technical education program in place up until the collapse of the Soviet Union. 70% study technical subjects in college. We have something like 40% which is very high. In the US their shortage is filled by a lotof Indians, and some Chinese. There's a huge shortage in the US. Something like 200,000 every year. The college system churns out 140,000. The average shortage is something like a million. The States saviour has been India, especially in manufacturing and software. A lot of work is also done in India for US firms. Since we were set up we've got college places doubled in size for technical degrees. Every course has been expanded – including national certs and diplomas.

So why is Ireland doing so well in the software industry?

That's the question everyone wants to know the answer to. I had a delegation of Chinese people only yesterday asking me the same question. The low tax break has to be the biggest incentive for foreign companies to relocate. The low rate of corporation tax. We've an educated workforce which means workers have the skills to do the job. Lower wages used to be more important but it's not a key factor any more.

What are working conditions within the IT industry in the Republic of Ireland like - compared to the US and other EU countries?

They are good. It's an up and down kind of job. Sometimes you are highly pressurised. You have deadlines and need to work like a black. You have to be able to adapt to working odd hours otherwise work in an in-house department like a bank or a semi-state would suit you better. If you work in Microsoft they're working to strict deadlines when versions of a new product will be shipped and everyone has to co-ordinate their areas so they'll meet the deadline. That's the nature of the business. In the Republic of Ireland firms have to treat their skilled people well. They may not be forced by law but you won't get workers to stay if you don't treat them well. The market will react – people will walk if they're not happy. It's more common now even in the Republic of Ireland for workers to get stock and share option. It's common but not yet standard. This makes you a part-owner. You're on a different level. Bonuses are given in other cases. In the software industry here only a handful of firms closed. Quiet a few laid a few people off

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but Irish multinational laids off very few Irish people compared to world-wide. The hardware industry was badly hit but very few were laid off in the software industry here. The firms that went were already in the high-risk category so we weren't that surprised when the downturn came that these had to close.

What kind of personal and professional development exists in IT? Do IT companies generally have policies for further employee training, better working conditions, etc?

There are two strands to that question. The first is professional development. Things that employers need you to know. Training occurs as part of the job, like having to learn a new language. The other is concerned with personal development. Things you want to do. It's very patchy the support you'd get here. Some firms would pay some of your fees, say if you wanted to do an arts degree, others don't care because it's no advantage to them. And it may give you qualifications that will enable you to go to another job. In semi-states you can study anything. If you're working for Microsoft that's one thing but if it's a small company then they can't afford that one employee is missing through taking time off to study. Perhaps a large company may use this training as a perk, and can afford to do it.

Is their lack of job security in the software industry?

It's more secure here than in the States. They have a hire and fire attitude. But it's not that secure here either. It's all fixed-term contacts – not a permanent job. That ethos is gone. People travel after a year or so. The fact that he job won't last forever is not a problem. Deals are done for a few years. You have to maintain your skills level. It's tougher in this industry because you have to pay attention to your skills set. Your security is in your CV.

What about representation for IT workers in cases of grievances, wage negotiation, performance appraisal systems, redundancies, dismissal etc? Who do workers have to represent them – works councils in Europe, associations, professional organisations/societies?

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Particularly in a time when we had far more jobs than people workers had the pick of the crop. Harassment can happen but there are other avenues open to deal with this – the trade and employment equality agency, grievance procedures, the labour court. All these free avenues are available to workers in the Republic of Ireland. Some of the older companies did have staff associations, and they were useful for organising social events, or sometimes when there is a dispute an association can work.

Is their any place for trade unions in the IT industry?

In semi-state organisations like Aer Lingus, the ESB, or CIE there are programmers in unions like MSF. Any company that's not in the software industry you may find union members. It's a constitutional right to join a union. But in the software industry you wouldn't find too many employees who would say 'I wish to join a union'. If there's a problem with a firm then I can piss off to another one. They have the salary, this is in their own hands. They don't need collective bargaining. A group of people in IBM joined a union in the '60s. IBM had a rule that no union would be tolerated. It was the Marine Porters and General Workers Union in Dublin. Computing was a very small area then. All the management was dismissed or sent off to Venezuela or somewhere. Digital – all non-union. Even when there was a shortage it was understood that there wouldn't be a union. The IDA would introduce firms to unions as a matter of procedure. At lower levels of the hardware industry there are some unions. More manufacturing firms can have unions. The more intellectually-higher jobs are not in unionised. Firms think we can keep these people happy without being involved in a union. Unions have a very low penetration rate in the States. When the steel, transport and trades fell apart it all went dead for unions.

Is it a class thing, that software people don't see themselves as working class?

A class thing – that's the way it's turned out. More traditionally unions were seen as militant. The physical conditions were much different in workshops, as well as the paying conditions. The majority of people in America are not in unions and this has had a great effect on IT. Unions have little to do with IT. It's a hire and fire economy in the US. But they adjust to the country they're in. In the Republic of Ireland they have a local human

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resources manager. They would behave differently here. A union wouldn't make much of a difference. There's a cheap appeals system here. Unfair dismissal in the US – is it a government sponsored system in the US?.

Litigation is the way in the States.

Yes. Here 90% of unfair dismissals win their cases in the labour court. Employers are quite happy if they want to fire someone they don't have to pay too much to get rid of them.

What about European policy with regard to personal and professional training in IT?

There was an attempt in the EU to categorise IT roles, for example, what does a systems analyst do?. There's a council – the ICS who's involved in defining job descriptions. There's also an expert group for skills' needs in the Republic of Ireland - the EGFSN. You'll find details of it at www.forfas.ie. I think Danny O'Hare, the ex-DCU head, is involved. The Information Society Commission deals with the penetration of computers into home etc. We're way down in that area. Vivienne Jupp is the person to talk to there.

Do you have any details of the hardware Industry in the Republic of Ireland?

All the old style companies have been badly hit – General Semi Conductors, Motorola, Gateway. They let a lot go. Intel has held on well, also Dell. The IDA has a list of low, medium and high-risk companies. The high-risk companies were the ones to go, because they were producing out-moded boards. These companies require low-grade workers. The labour costs are too high here. There's no advantage in doing it in the Republic of Ireland. They might as well move to Taiwan. I don't know of any national hardware association, though there was one in Cork.

How is the Irish IT industry being affected by multinationals in terms of workers development, work practices, organisational culture, and type of management?

Not so much. There's no link except that people work in multinationals and learn new skills. There are very few times that workers have left a multinational and then set-up

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themselves. There's only one company that I know of where that occurred – Alchemy was set-up by workers from the Canadian company, CorelDraw. Multinationals have created an image of Ireland as a software country and that draws others like Lotus and Microsoft. Then Irish companies provide services for them – translations etc. Then the services set-up themselves. There's an ingenuity about people being able to spot a niche in the market, even when confined, and they can come up with a product that can meet the needs.

The education system here is as good as any in the world. It is highly rated. There are big tax incentives. Corporation tax is the lowest in the world at 10 - 12.5% soon. In Germany it's 50%, the US is 40%, and Britain is 30%. The EU has helped us, but we're way down with infrastructure: air, roads, telephones. All the firms still want to stay in Dublin. We need a decent telephone service. There was a lot invested in posts and telegraphs. We now have an enormous bandwidth – the same as Germany. Our stable government is another plus. Parties aren't that different politically so policies don't change significantly with changes in government.

How are firms selected to be included in the database of IT firms in the Republic of Ireland that appears on your website?

Strictly, the firms are there based on the fact that we believe that they create original software, to some extent. We exclude people like PC dealers who just sell third party shrink wrapped software with their machines. However, it is difficult to be right all the time, and it may not be 100% what it is supposed to be. They are not members of anything, and most of them (in number terms) have no relationship with the industrial development agencies (EI, Udaras, SFADCO, and IDA). A lot of them are 1-man or 2-women outfits.

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Appendix B

Trade Union Pilot Unionised Surveys

Company Surveyed	Location	Response	Date
An Post	Dublin, Ireland	Surveyed employees	June 1 2002
Aer Lingus	Dublin, Ireland	Survey refused	June 1 2002
Eircom	Dublin, Ireland	Surveyed employees	June 3 2002
IBM	Dublin, Ireland	Survey refused	June 3 2002
Logitech	Fremont, California, USA	Surveyed – no response	June 5 2002
IBM	San Jose, California, USA	Survey refused	June 5 2002
Juniper	Mountain View, California, USA	Surveyed – no response	June 102002
Apple	Cupertino, California, USA	Survey refused	June 10 2002

Appendix C

Trade Union Pilot Non-unionised Surveys

Company Surveyed	Location	Response	Date
Motorola	Swords, Dublin, Ireland	Survey refused	June 1 2002
Hp Ireland	Dublin, Ireland	Surveyed employees	June 1 2002
Ericsson	Dublin, Ireland	Surveyed employees	June 5 2002
Lucent Technologies	Dublin the Republic of Ireland	Survey refused	June 5 2002
Sun Microsystems	Santa Clara, California, USA	Survey refused	June 10 2002
Netscreen	Santa Clara, California, USA	Surveyed employees	June 10 2002
Jariva	Mountain View, California, USA	Surveyed employees	June 10 2002
NetVmg	Santa Clara, California, USA	Survey refused	June 10 2002

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Appendix D

Questionnaire for Pilot Studies: Dublin, Non-union

Pilot Questionnaire for IT Employees

This survey has been developed by Lucy Costigan, as part of her PhD research studies at the National College of Ireland, Ranelagh, Dublin 6. This is a pilot questionnaire that will be used to help formulate a more detailed questionnaire later.

The author would appreciate it if you could answer every question in this survey. Where a choice of answer is presented please tick the appropriate box. All answers will be kept completely confidential.

1. Please tick your gender Male ☐ Female ☐

2. What is your job title?

3. What is your highest level of education? Primary
   If other please give details:

4. Is there a staff association in your organisation? Yes ☐ No ☐

5. If yes, please state any benefits that you derive from being a member of this association

6. If yes, does your association promote professional development in your organisation?

7. Are you a member of any professional computer organisation? Yes ☐ No ☐

8. If yes, please give details.

9. Who would represent you if there were a problem at work?

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10. Have you ever felt the need for external representation at work? Yes ☐ No ☐

11. If yes, please give details.

12. How important is professional development to you:

Are you a member of a professional body (please list in full):

Are you undertaking (or plan to undertake) postgraduate study:

Do you have a professional development plan:

13. How important is personal development to you:

What are your regular hobbies/ pass-times:

What components (themes) would you include in a personal development plan?

14. Is your salary level comparable with that of other IT professionals in similar positions?

Yes ☐ No ☐ Don't know ☐

15. How many hours do you spend at work per week, taking an approximate average over the last three months? 30-35

16. How would you describe your work environment?

17. When did you last receive training for new skills that are required as part of your job?

Never received training

18. If you wish to pursue training or further qualifications is this funded by your organisation?

Thank you for taking the time to fill in this questionnaire. Your response is vital to enable a major study in this area to be conducted in the future.

Please email the completed questionnaire to ncipilot@excite.com

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Appendix D

Questionnaire for Pilot Studies: Dublin, Union

Pilot Questionnaire for IT Employees

This survey has been developed by Lucy Costigan, as part of her PhD research studies at the National College of Ireland, Ranelagh, Dublin 6. This is a pilot questionnaire that will be used to help formulate a more detailed questionnaire later.

The author would appreciate it if you could answer every question in this survey. Where a choice of answer is presented please tick the appropriate box. All answers will be kept completely confidential.

1. Please tick your gender Male ☐ Female ☐

2. What is your job title?

3. What is your highest level of education? Primary
   If other please give details:

4. Is there a staff association in your organisation? Yes ☐ No ☐

5. If yes, please state any benefits that you derive from being a member of this association

6. If yes, does your association promote professional development in your organisation?

7. Are you a member of any professional computer organisation? Yes ☐ No ☐

8. If yes, please give details.

9. Who would represent you if there were a problem at work?

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10. Have you ever felt the need for external representation at work? Yes ☐ No ☐

11. If yes, please give details.

12. How important is professional development to you:

    Are you a member of a professional body (please list in full):

    Are you undertaking (or plan to undertake) postgraduate study:

    Do you have a professional development plan:

13. How important is personal development to you:

    What are your regular hobbies/ pass-times:

    What components (themes) would you include in a personal development plan?

14. Is your salary level comparable with that of other IT professionals in similar positions?

    Yes ☐ No ☐ Don't know ☐

15. How many hours do you spend at work per week, taking an approximate average over the last three months? 30-35

16. How would you describe your work environment?

17. When did you last receive training for new skills that are required as part of your job?

    Never received training

18. If you wish to pursue training or further qualifications is this funded by your organisation?

Thank you for taking the time to fill in this questionnaire. Your response is vital to enable a major study in this area to be conducted in the future.

Please email the completed questionnaire to capilot@excite.com

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Appendix D

Questionnaire for Pilot Studies: Silicon Valley, Union

Pilot Questionnaire for IT Employees

This survey has been developed by Lucy Costigan, as part of her PhD research studies at the National College of Ireland, Ranelagh, Dublin 6. This is a pilot questionnaire that will be used to help formulate a more detailed questionnaire later.

The author would appreciate it if you could answer every question in this survey. Where a choice of answer is presented please tick the appropriate box. All answers will be kept completely confidential.

1. Please tick your gender Male ☐ Female ☐

2. What is your job title?

3. What is your highest level of education? Primary

   If other please give details:

4. How long have you been a union member?

5. What union are you a member of?

6. What benefits, if any, do you derive from being a union member?

7. What disadvantages, if any, do you derive from being a union member?

8. What percentage of your salary do you attribute to union negotiation? 0-5%

9. Is there a staff association in your organisation? Yes ☐ No ☐

10. If yes, please state any benefits that you get from being a member of this association

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11. Who would represent you if there were a problem at work?

12. How many hours do you spend at work per week, taking an approximate average over the last three months? 30-35

13. How important is professional development to you:

    Are you a member of a professional body (please list in full):

    Are you undertaking (or plan to undertake) postgraduate study:

    Do you have a professional development plan:

14. How important is personal development to you:

    What are your regular hobbies/ pass-times:

    What components (themes) would you include in a personal development plan?

15. How would you describe your work environment?

16. When did you last receive training at work for new skills that are required as part of your job? Never received training

17. If you wish to pursue training or further qualifications is this funded by your organisation?

18. Does your union contribute to or promote professional development in your organisation?

19. Are there other benefits or disadvantages of Trade Union membership that you would like to see addressed in a fuller study?

Thank you for taking the time to fill in this questionnaire. Your response is vital to enable a major study in this area to be conducted in the future.

Please email the completed questionnaire to ncistudy@excite.com

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Appendix D

Questionnaire for Pilot Studies: Silicon Valley, Non-union

Pilot Questionnaire for IT Employees

This survey has been developed by Lucy Costigan, as part of her PhD research studies at the National College of Ireland, Ranelagh, Dublin 6. This is a pilot questionnaire that will be used to help formulate a more detailed questionnaire later.

The author would appreciate it if you could answer every question in this survey. Where a choice of answer is presented please tick the appropriate box. All answers will be kept completely confidential.

1. Please tick your gender Male ☐ Female ☐

2. What is your job title?

3. What is your highest level of education? Primary

   If other please give details:

4. How long have you been a union member?
5. What union are you a member of?

6. What benefits, if any, do you derive from being a union member?

7. What disadvantages, if any, do you derive from being a union member?

8. What percentage of your salary do you attribute to union negotiation? 0-5%

9. Is there a staff association in your organisation? Yes ☐ No ☐

10. If yes, please state any benefits that you get from being a member of this association

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11. Who would represent you if there were a problem at work?

12. How many hours do you spend at work per week, taking an approximate average over the last three months? 30-35

13. How important is professional development to you:

    Are you a member of a professional body (please list in full):

    Are you undertaking (or plan to undertake) postgraduate study:

    Do you have a professional development plan:

14. How important is personal development to you:

    What are your regular hobbies/ pass-times:

    What components (themes) would you include in a personal development plan?

15. How would you describe your work environment?

16. When did you last receive training at work for new skills that are required as part of your job? Never received training

17. If you wish to pursue training or further qualifications is this funded by your organisation?

18. Does your union contribute to or promote professional development in your organisation?

19. Are there other benefits or disadvantages of Trade Union membership that you would like to see addressed in a fuller study?

Thank you for taking the time to fill in this questionnaire. Your response is vital to enable a major study in this area to be conducted in the future.

Please email the completed questionnaire to castudy@excite.com

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Appendix E

Questionnaire for Preliminary Main Study: Dublin, Ireland

Questionnaire for IT Employees in Dublin, Ireland

This survey has been developed by Lucy Costigan, as part of her PhD research studies at the National College of Ireland, IFSC, Major Street, Dublin 1.

The author would appreciate it if you could answer every question in this survey. Where a choice of answer is presented please tick the appropriate box. All answers will be kept completely confidential.

1. Please tick your gender Male ☐ Female ☐

2. Which of the following best describes your current position? Project Manager

3. What is your highest level of education? Primary education
If other please give details:

Professional Development

4. Taking your knowledge/skill base on graduation as 100%, please indicate what is your current knowledge/skill level in each subject listed? (A value of more than 100% indicates new knowledge/skills acquired, while a value of less than 100% indicates that part of your knowledge acquired is not relevant to your professional work).

Skill/Knowledge Area	%	Skill/Knowledge Area	%
Algorithms & Data Structures		Physics	
Architecture		Electronics	
Artificial Intelligence & Robotics		Control Theory	
Database & Information Retrieval		Communications Hardware	
Human Computer Interaction		Management Information Systems	
Numerical & Symbolical Computing		Decision Support Systems	
Operating Systems		Business Subjects	
Programming Languages		Numerical Analysis	
Software Methodology/Engineering		Statistics	
Networks		Operations Research	
Logic		Signal Processing	
Discrete Mathematics		Computational Linguistics	
Automata Theory		Machine Translation	
Cryptography			

5. Can you suggest new immerging topic areas in which you have recently acquired knowledge/skills? Please also score these on the same scale as Question 4.

Skill/Knowledge Area	%	Skill/Knowledge Area	%

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6. Are you a member of any professional computer organisation? Yes ☐ No ☐

7a. How do you currently acquire new skills? On the job training

7b. How do you propose to reskill in emerging topics?

7c. In your opinion which are the most important topic areas in which to reskill?

8. When did you last receive training for new skills that are required as part of your job?
Never received training

9. How does your employer help you to acquire new skills? By funding external courses

Personal Development

10. On a scale of 0 to 5 (with 0 being of no importance and 5 being of great importance), please indicate the importance that you would place on the following aspects of your life:

Aspects of Life	0-5 Scale
Successful work life	
Happy family life	
Fulfilling leisure pursuits	
Satisfying friendships	
Varied social life	
Early retirement	
Personal fulfillment through hobbies	
Life-long learning	
Children's academic success	
Compatible relationship	
Good prospects of promotion at work	
Financially comfortable	
Voluntary work in the community	

11. In the last month, please indicate the approximate number of hours spent on each of the following:

Activities	Hours
Hobbies/Leisuretime/Socialising	
Family time	
Fulfilling leisure pursuits	
Training or academic pursuits	
Work	

12. Please indicate which of the following needs are adequately met by your current employment, with 100% indicating that needs are fully met, and 0 indicating that theses needs are not met at all.

Needs Met by current employment	%
Financial security	
Sense of belonging	
Feeling of contributing	
Sense of achievement	

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13. On a scale of 0 to 5 (with 0 indicating no importance and 5 indicating great importance), please indicate the importance of introducing the following to your workplace. Please also indicate with an asterisk if this facility already exists in your workplace.

Facilities	0-5 Scale
Crèche facilities	
Promotion of work-life balance	
Encouragement of further academic training	
Promotion based on seniority	
Telecommuting	
Job Sharing	
Extended maternity leave	
Paternity leave	
Funded counselling	
Unpaid leave option during family crisis	

Work Environment

14. Is there a staff association in your organisation? Yes ☐ No ☐

15. If yes, please state any benefits that you derive from being a member of this association

16. If yes, does your association promote professional development in your organisation?

17. Who would represent you if there were a problem at work?

18. Please tick which of the following best describes your work environment, with strongly agree indicating a strong agreement with the values listed, and strongly disagree indicating a strong disagreement with the value listed.

Work Environment	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
Stressful	☐	☐	☐	☐	☐
Relaxed	☐	☐	☐	☐	☐
Team-orientated	☐	☐	☐	☐	☐
Competitive	☐	☐	☐	☐	☐
Good core values	☐	☐	☐	☐	☐
Promotes creativity	☐	☐	☐	☐	☐
Authoritative	☐	☐	☐	☐	☐
Pressurised	☐	☐	☐	☐	☐
Promotes work-life balance	☐	☐	☐	☐	☐
Critical	☐	☐	☐	☐	☐
Supportive	☐	☐	☐	☐	☐
Flexible	☐	☐	☐	☐	☐
People-orientated	☐	☐	☐	☐	☐
Appreciative	☐	☐	☐	☐	☐

19a. How long have you been in your current employment?

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19b. How long were you in your last employment?

19c. What is the optimum time you consider to be in employment in any firm?

20 How many hours do you spend at work per week, taking an approximate average over the last three months? < 30

Thank you for taking the time to fill in this questionnaire. Your response is vital to enable a major study in this area to be conducted in the future.

Please email the completed questionnaire to rmarb5@msn.com

My research may lead to a more detailed study of personal and professional development. I would really appreciate it if you would volunteer to take part in a further study. If so, please include your email address here .

All responses will remain completely confidential. Volunteers will be sent a full copy of the outcome of the study.

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Appendix E

Questionnaire for Preliminary Main Study: Silicon Valley, California

Questionnaire for IT Employees in Silicon Valley, California

This survey has been developed by Lucy Costigan, as part of her PhD research studies at the National College of Ireland, IFSC, Major Street, Dublin 1.

The author would appreciate it if you could answer every question in this survey. Where a choice of answer is presented please tick the appropriate box. All answers will be kept completely confidential.

1. Please tick your gender Male ☐ Female ☐

2. Which of the following best describes your current position? Project Manager

3. What is your highest level of education? Primary education
If other please give details:

Professional Development

4. Taking your knowledge/skill base on graduation as 100%, please indicate what is your current knowledge/skill level in each subject listed? (A value of more than 100% indicates new knowledge/skills acquired, while a value of less than 100% indicates that part of your knowledge acquired is not relevant to your professional work).

Skill/Knowledge Area	%	Skill/Knowledge Area	%
Algorithms & Data Structures		Physics	
Architecture		Electronics	
Artificial Intelligence & Robotics		Control Theory	
Database & Information Retrieval		Communications Hardware	
Human Computer Interaction		Management Information Systems	
Numerical & Symbolical Computing		Decision Support Systems	
Operating Systems		Business Subjects	
Programming Languages		Numerical Analysis	
Software Methodology/Engineering		Statistics	
Networks		Operations Research	
Logic		Signal Processing	
Discrete Mathematics		Computational Linguistics	
Automata Theory		Machine Translation	
Cryptography			

5. Can you suggest new immerging topic areas in which you have recently acquired knowledge/skills? Please also score these on the same scale as Question 4.

Skill/Knowledge Area	%	Skill/Knowledge Area	%

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6. Are you a member of any professional computer organisation? Yes ☐ No ☐

7a. How do you currently acquire new skills? On the job training

7b. How do you propose to reskill in emerging topics?

7c. In your opinion which are the most important topic areas in which to reskill?

8. When did you last receive training for new skills that are required as part of your job?
Never received training

9. How does your employer help you to acquire new skills? By funding external courses

Personal Development

10. On a scale of 0 to 5 (with 0 being of no importance and 5 being of great importance), please indicate the importance that you would place on the following aspects of your life:

Aspects of Life	0-5 Scale
Successful work life	
Happy family life	
Fulfilling leisure pursuits	
Satisfying friendships	
Varied social life	
Early retirement	
Personal fulfillment through hobbies	
Life-long learning	
Children's academic success	
Compatible relationship	
Good prospects of promotion at work	
Financially comfortable	
Voluntary work in the community	

11. In the last month, please indicate the approximate number of hours spent on each of the following:

Activities	Hours
Hobbies/Leisuretime/Socialising	
Family time	
Fulfilling leisure pursuits	
Training or academic pursuits	
Work	

12. Please indicate which of the following needs are adequately met by your current employment, with 100% indicating that needs are fully met, and 0 indicating that theses needs are not met at all.

Needs Met by current employment	%
Financial security	
Sense of belonging	
Feeling of contributing	
Sense of achievement	

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13. On a scale of 0 to 5 (with 0 indicating no importance and 5 indicating great importance), please indicate the importance of introducing the following to your workplace. Please also indicate with an asterisk if this facility already exists in your workplace.

Facilities	0-5 Scale
Crèche facilities	
Promotion of work-life balance	
Encouragement of further academic training	
Promotion based on seniority	
Telecommuting	
Job Sharing	
Extended maternity leave	
Paternity leave	
Funded counselling	
Unpaid leave option during family crisis	

Work Environment

14. Is there a staff association in your organisation? Yes ☐ No ☐

15. If yes, please state any benefits that you derive from being a member of this association

16. If yes, does your association promote professional development in your organisation?

17. Who would represent you if there were a problem at work?

18. Please tick which of the following best describes your work environment, with strongly agree indicating a strong agreement with the values listed, and strongly disagree indicating a strong disagreement with the value listed.

Work Environment	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
Stressful	☐	☐	☐	☐	☐
Relaxed	☐	☐	☐	☐	☐
Team-orientated	☐	☐	☐	☐	☐
Competitive	☐	☐	☐	☐	☐
Good core values	☐	☐	☐	☐	☐
Promotes creativity	☐	☐	☐	☐	☐
Authoritative	☐	☐	☐	☐	☐
Pressurised	☐	☐	☐	☐	☐
Promotes work-life balance	☐	☐	☐	☐	☐
Critical	☐	☐	☐	☐	☐
Supportive	☐	☐	☐	☐	☐
Flexible	☐	☐	☐	☐	☐
People-orientated	☐	☐	☐	☐	☐
Appreciative	☐	☐	☐	☐	☐

19a. How long have you been in your current employment?

19b. How long were you in your last employment?

19c. What is the optimum time you consider to be in employment in any firm?

20 How many hours do you spend at work per week, taking an approximate average over the last three months? < 30

Thank you for taking the time to fill in this questionnaire. Your response is vital to enable a major study in this area to be conducted in the future.

Please email the completed questionnaire to rmarb5@msn.com

My research may lead to a more detailed study of personal and professional development. I would really appreciate it if you would volunteer to take part in a further study. If so, please include your email address here .

All responses will remain completely confidential. Volunteers will be sent a full copy of the outcome of the study.

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Appendix F

Questionnaire For Main Study, Dublin the Republic of Ireland

Questionnaire for IT Employees in Dublin, Ireland

This survey has been developed by Lucy Costigan, as part of her PhD research studies at the National College of Ireland, IFSC, Major Street, Dublin 1.

The author would appreciate it if you could answer every question in this survey. Where a choice of answer is presented please tick the appropriate box. All answers will be kept completely confidential.

1. Please tick your gender Male ☐ Female ☐

2. Which of the following best describes your current position? Project Manager

3. What is your highest level of education? Primary education
   If other please give details:

Professional Development

4. Taking your knowledge/skill base on graduation as 100%, please indicate what is your current knowledge/skill level in each subject listed? (A value of more than 100% indicates new knowledge/skills acquired, while a value of less than 100% indicates that part of your knowledge acquired is not relevant to your professional work).

Skill/Knowledge Area	%	Skill/Knowledge Area	%
Algorithms & Data Structures		Physics	
Architecture		Electronics	
Artificial Intelligence & Robotics		Control Theory	
Database & Information Retrieval		Communications Hardware	
Human Computer Interaction		Management Information Systems	
Numerical & Symbolical Computing		Decision Support Systems	
Operating Systems		Business Subjects	
Programming Languages		Numerical Analysis	
Software Methodology/Engineering		Statistics	
Networks		Operations Research	
Logic		Signal Processing	
Discrete Mathematics		Computational Linguistics	
Automata Theory		Machine Translation	
Cryptography			

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5a. In relation to each of the following topics, how do you rate their relevance to your current work?

Skill/Knowledge Area	%	Skill/Knowledge Area	%
Hardware Interfaces		Telecoms	
Strategic Analysis		Distributed Systems	
Requirements Analysis		Transmissions Systems	
Financing		Routing	
Video Editing/Compression		New Programming Languages	
Intelligent Networks		Project Management	
Mobile Networks		Messaging	
Fixed Networks		Technical Documentation	
Web Design		Help Systems	

5b. Please add any additional topics not previously mentioned that you wish to reskill in.

Skill/Knowledge Area	%	Skill/Knowledge Area	%

6. Are you a member of any professional computer organisation? Yes ☐ No ☐

7a. How do you currently acquire new skills? On the job training

7b. How do you propose to reskill in emerging topics? On the job training

8. When did you last receive training for new skills that are required as part of your job? Never received training

9. How does your employer help you to acquire new skills? By funding external courses

Personal Development

10. On a scale of 0 to 5 (with 0 being of no importance and 5 being of great importance), please indicate the importance that you would place on the following aspects of your life:

Aspects of Life	0-5 Scale
Successful work life	
Happy family life	
Fulfilling leisure pursuits	
Satisfying friendships	
Varied social life	
Early retirement	
Personal fulfilment through hobbies	
Life-long learning	
Children's academic success	
Compatible relationship	
Good prospects of promotion at work	
Financially comfortable	
Voluntary work in the community	

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11. In the last month, please indicate the approximate number of hours spent on each of the following:

Activities	Hours
Hobbies/Leisuretime/Socialising	
Family time	
Fulfilling leisure pursuits	
Training or academic pursuits	
Work	

12. Please indicate which of the following needs are adequately met by your current employment, with 100% indicating needs are fully met, and 0 indicating that theses needs are not met at all.

Needs Met by current employment	%
Financial security	
Sense of belonging	
Feeling of contributing	
Sense of achievement	

13. On a scale of 0 to 5 (with 0 indicating no importance and 5 indicating great importance), please indicate the importance of introducing the following to your workplace. Please also indicate with an asterisk if this facility already exists in your workplace.

Facilities	0-5 Scale
Crèche facilities	
Promotion of work-life balance	
Encouragement of further academic training	
Promotion based on seniority	
Telecommuting	
Job Sharing	
Extended maternity leave	
Paternity leave	
Funded counselling	
Unpaid leave option during family crisis	

Work Environment

14. Who would represent you if there were a problem at work? Self

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15. Please tick which of the following best describes your work environment, with strongly agree indicating a strong agreement with the values listed, and strongly disagree indicating a strong disagreement with the value listed.

Work Environment	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
Stressful	☐	☐	☐	☐	☐
Relaxed	☐	☐	☐	☐	☐
Team-orientated	☐	☐	☐	☐	☐
Competitive	☐	☐	☐	☐	☐
Good core values	☐	☐	☐	☐	☐
Promotes creativity	☐	☐	☐	☐	☐
Authoritative	☐	☐	☐	☐	☐
Pressurised	☐	☐	☐	☐	☐
Promotes work-life balance	☐	☐	☐	☐	☐
Critical	☐	☐	☐	☐	☐
Supportive	☐	☐	☐	☐	☐
Flexible	☐	☐	☐	☐	☐
People-orientated	☐	☐	☐	☐	☐
Appreciative	☐	☐	☐	☐	☐

16a. How long have you been in your current employment? < 1 yr

16b. How long were you in your last employment? This is my first job

16c. What is the optimum time you consider to be in employment in any firm? < 1 yr

17 How many hours do you spend at work per week, taking an approximate average over the last three months? < 30

Thank you for taking the time to fill in this questionnaire. Please email the completed questionnaire to costiganlucy@hotmail.com

My research may lead to a more detailed study of personal and professional development. I would really appreciate it if you would volunteer to take part in a further study. If so, please include your email address here .

All responses will remain completely confidential. Volunteers will be sent a full copy of the outcome of the study.

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Appendix F

Questionnaire For Main Study, Silicon Valley, California

Questionnaire for IT Employees in Silicon Valley, California

This survey has been developed by Lucy Costigan, as part of her PhD research studies at the National College of Ireland, IFSC, Major Street, Dublin 1.

The author would appreciate it if you could answer every question in this survey. Where a choice of answer is presented please tick the appropriate box. All answers will be kept completely confidential.

1. Please tick your gender Male ☐ Female ☐

2. Which of the following best describes your current position? Project Manager

3. What is your highest level of education? Primary education
   If other please give details:

Professional Development

4. Taking your knowledge/skill base on graduation as 100%, please indicate what is your current knowledge/skill level in each subject listed? (A value of more than 100% indicates new knowledge/skills acquired, while a value of less than 100% indicates that part of your knowledge acquired is not relevant to your professional work).

Skill/Knowledge Area	%	Skill/Knowledge Area	%
Algorithms & Data Structures		Physics	
Architecture		Electronics	
Artificial Intelligence & Robotics		Control Theory	
Database & Information Retrieval		Communications Hardware	
Human Computer Interaction		Management Information Systems	
Numerical & Symbolical Computing		Decision Support Systems	
Operating Systems		Business Subjects	
Programming Languages		Numerical Analysis	
Software Methodology/Engineering		Statistics	
Networks		Operations Research	
Logic		Signal Processing	
Discrete Mathematics		Computational Linguistics	
Automata Theory		Machine Translation	
Cryptography			

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5a. In relation to each of the following topics, how do you rate their relevance to your current work?

Skill/Knowledge Area	%	Skill/Knowledge Area	%
Hardware Interfaces		Telecoms	
Strategic Analysis		Distributed Systems	
Requirements Analysis		Transmissions Systems	
Financing		Routing	
Video Editing/Compression		New Programming Languages	
Intelligent Networks		Project Management	
Mobile Networks		Messaging	
Fixed Networks		Technical Documentation	
Web Design		Help Systems	

5b. Please add any additional topics not previously mentioned that you wish to reskill in.

Skill/Knowledge Area	%	Skill/Knowledge Area	%

6. Are you a member of any professional computer organisation? Yes ☐ No ☐

7a. How do you currently acquire new skills? On the job training

7b. How do you propose to reskill in emerging topics? On the job training

8. When did you last receive training for new skills that are required as part of your job? Never received training

9. How does your employer help you to acquire new skills? By funding external courses

Personal Development

10. On a scale of 0 to 5 (with 0 being of no importance and 5 being of great importance), please indicate the importance that you would place on the following aspects of your life:

Aspects of Life	0-5 Scale
Successful work life	
Happy family life	
Fulfilling leisure pursuits	
Satisfying friendships	
Varied social life	
Early retirement	
Personal fulfilment through hobbies	
Life-long learning	
Children's academic success	
Compatible relationship	
Good prospects of promotion at work	
Financially comfortable	
Voluntary work in the community	

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11. In the last month, please indicate the approximate number of hours spent on each of the following:

Activities	Hours
Hobbies/Leisuretime/Socialising	
Family time	
Fulfilling leisure pursuits	
Training or academic pursuits	
Work	

12. Please indicate which of the following needs are adequately met by your current employment, with 100% indicating needs are fully met, and 0 indicating that theses needs are not met at all.

Needs Met by current employment	%
Financial security	
Sense of belonging	
Feeling of contributing	
Sense of achievement	

13. On a scale of 0 to 5 (with 0 indicating no importance and 5 indicating great importance), please indicate the importance of introducing the following to your workplace. Please also indicate with an asterisk if this facility already exists in your workplace.

Facilities	0-5 Scale
Crèche facilities	
Promotion of work-life balance	
Encouragement of further academic training	
Promotion based on seniority	
Telecommuting	
Job Sharing	
Extended maternity leave	
Paternity leave	
Funded counselling	
Unpaid leave option during family crisis	

Work Environment

14. Who would represent you if there were a problem at work? Self

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15. Please tick which of the following best describes your work environment, with strongly agree indicating a strong agreement with the values listed, and strongly disagree indicating a strong disagreement with the value listed.

Work Environment	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
Stressful	☐	☐	☐	☐	☐
Relaxed	☐	☐	☐	☐	☐
Team-orientated	☐	☐	☐	☐	☐
Competitive	☐	☐	☐	☐	☐
Good core values	☐	☐	☐	☐	☐
Promotes creativity	☐	☐	☐	☐	☐
Authoritative	☐	☐	☐	☐	☐
Pressurised	☐	☐	☐	☐	☐
Promotes work-life balance	☐	☐	☐	☐	☐
Critical	☐	☐	☐	☐	☐
Supportive	☐	☐	☐	☐	☐
Flexible	☐	☐	☐	☐	☐
People-orientated	☐	☐	☐	☐	☐
Appreciative	☐	☐	☐	☐	☐

16a. How long have you been in your current employment? < 1 yr

16b. How long were you in your last employment? This is my first job

16c. What is the optimum time you consider to be in employment in any firm? < 1 yr

17. How many hours do you spend at work per week, taking an approximate average over the last three months? < 30

Thank you for taking the time to fill in this questionnaire. Please email the completed questionnaire to costiganlucy@hotmail.com

My research may lead to a more detailed study of personal and professional development. I would really appreciate it if you would volunteer to take part in a further study. If so, please include your email address here .

All responses will remain completely confidential. Volunteers will be sent a full copy of the outcome of the study.

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Appendix G

Results of Pilot Study for IT Workers Dublin, Ireland - Union

No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. How long union member?	Q. 5 What union?.	Q. 6. Benefits of Union Membership	Q. 7. Disadvs. of union membership?	Q. 8. What % of salary attrib. To union?	Q. 9. Is there a staff assoc?	Q. 10. Benefits of staff assoc?	Q. 11. Who would represent you if problems at work?	Q. 12. Hours at work per week	Q. 13. How important is prof devel?	Q. 14. How important is personal devel?	Q. 15. Describe Work Environment	Q. 16. Training	Q. 17. Is Training Funded?	Q. 18. Does union contribute /promote prof dev?	Q.19 Benefits/advantages of union membership
1	M.	Team Leader		Not currently a member, but considering joining		Security, help in case of problems	Union could be un realistic in approach to work requirements				Unknown		(a) No (b) Not at this time (c) No	(a) reading, running a club, drama (b)	Pleasant, relaxed but still work focused		Depends on the course but generally yes	Unknown	Unknown
2	M	Technical Support Specialist	Third Level Degree	na	na	na	na	0-5%	Yes	na	Myself	40-44	(a) Microsoft Certified Systems Engineer, Compaq, Accredited Platform Specialist (b) Yes (c) Yes	(a) Golf, Swimming, Socializing (b) Carcer, Health, Family, friends, Partnerships	Team Oriented and Challenging	1-3 months ago	Yes	na	No
3	M	Technical Support Specialist	Third Level Degree	15 years	PSEU	None	Subject to collective bargaining	0-5%	Yes	-	I would represent myself	45-49	(a) No (b) Yes (c) Yes	(a) Gold, fishing, driving (b) Huh?	Relaxed	1-3 months ago	Yes	No	I do not believe that membership of a

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. How long union member?	Q. 5 What union?.	Q. 6. Benefits of Union Membership	Q. 7. Disadvs. of union membership?	Q. 8. What % of salary attrib. To union?	Q. 9. Is there a staff assoc?	Q. 10. Benefits of staff assoc?	Q. 11. Who would represent you if problems at work?	Q. 12. Hours at work per week	Q. 13. How important is prof devel?	Q. 14. How important is personal devel?	Q. 15. Describe Work Environment	Q. 16. Training	Q. 17. Is Training Funded?	Q. 18. Does union contribute /promote prof dev?	Q.19 Benefits/advantages of union membership
																			Trade Union is particularly important to me at this level (of employment). In fact, I would think that it impinges on my ability to negotiate and bargain on my own behalf with my employers.

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. How long union member?	Q. 5 What union?.	Q. 6. Benefits of Union Membership	Q. 7. Disadvs. of union membership?	Q. 8. What % of salary attrib. To union?	Q. 9. Is there a staff assoc?	Q. 10. Benefits of staff assoc?	Q. 11. Who would represent you if problems at work?	Q. 12. Hours at work per week	Q. 13. How important is prof devel?	Q. 14. How important is personal devel?	Q. 15. Describe Work Environment	Q. 16. Training	Q. 17. Is Training Funded?	Q. 18. Does union contribute /promote prof dev?	Q.19 Benefits/advantages of union membership
4	M	Senior Analyst Programmer	Third Level Degree	21 years	PSEU	Benefits from local agreements	unknown	0-5%	Yes		Myself	35-39	(a) No (b) No (c) Yes	(a) DIY, reading, ongoing study (b) Management Roll, New Technologies	Pleasant	1 to 3 months	No	No	Where I work everybody is in a union, so it is hard to identify any real advantages/disadvantages
5	M	Technical Support Specialist	Third Level Degree	20 years	PSEU	Very Little	None	0-5%	Yes	Credit Union	Myself in the first instance	45-49	(a) No (b) Yes (c) Yes	(a) All sports, meeting friends (b) Enjoyment	Great	4-6 months	Yes	No	Do we get value for money for the union
6	M	Technical Support Specialist	Third level (Dip)	21 years	PSEU		none	0-5%	No		Union Rep	45-49	(a) No (b) No (c) Yes	(a) Keeping fit (b) assertiveness and negotiation skills trainin	Technically rewarding	4-6 months	Part-funded	Yes very much so	The part that unions as members of the Partnership proces

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. How long union member?	Q. 5 What union?.	Q. 6. Benefits of Union Membership	Q. 7. Disadvs. of union membership?	Q. 8. What % of salary attrib. To union?	Q. 9. Is there a staff assoc?	Q. 10. Benefits of staff assoc?	Q. 11. Who would represent you if problems at work?	Q. 12. Hours at work per week	Q. 13. How important is prof devel?	Q. 14. How important is personal devel?	Q. 15. Describe Work Environment	Q. 16. Training	Q. 17. Is Training Funded?	Q. 18. Does union contribute /promote prof dev?	Q.19 Benefits/advantages of union membership
														g					s play in distributing the gains of the Celtic Tiger as fairly as possible among st all sectors of society
7	F	Analyst Programmer	Degree & Graduate Diploma	5 Years	PSEU, last employment - SIPTU	None	None	0-5%	Yes		Union	40-44	(a) No (b) No (c) Yes	(a) Dancing, Gym, Cycling, Sailing (summer) (b) Time Management – How to mix	Hard working but informal to a certain degree. A good working environment, with good	1-3 months	Yes	NO	No

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. How long union member?	Q. 5 What union?.	Q. 6. Benefits of Union Membership	Q. 7. Disadvs. of union membership?	Q. 8. What % of salary attrib. To union?	Q. 9. Is there a staff assoc?	Q. 10. Benefits of staff assoc?	Q. 11. Who would represent you if problems at work?	Q. 12. Hours at work per week	Q. 13. How important is prof devel?	Q. 14. How important is personal devel?	Q. 15. Describe Work Environment	Q. 16. Training	Q. 17. Is Training Funded?	Q. 18. Does union contribute /promote prof dev?	Q.19 Benefits/advantages of union membership
														family time with social time and work time. How to maintain a healthy lifestyle. A course aimed at discovering how to gain the most out of life.	communication with my sponsors.				
8	M	IT HelpDesk Manager	Diploma in IT (Distance Learning) Curren	17 Years	PSEU	Salary negotiations, working conditions and cheaper car	Decisions being made based on a majority decision that I	76%+	NO		Union Rep	36 Hours 15 Minutes	Very important (a) No (b) No (c) Probably do a managem	(a) Horse-riding (b) I am very interested in	I manage a staff of ten. Working on a HelpD	13-15 months	Yes	Not aware	

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			tly doing the degree modules of this course			insurance.	may not totally agree with.						cnt course after I complete my degree course	how the mind works, especially anything to do with improving learning. (Mind maps, speed-reading, study skills and neuro0 linguistic programming).	esk can be fairly stressful so I try and keep the environment as easy going as possible.				
9	M	Technical Support Specialist	Third Level (Cert)	18 yrs	PSEU	Collective Bargaining, Reduced Travel	None	0-5%	No		PSEU Branch Officers	40-44	(a) (b) Yes (c) Yes	(a) Coaching soccer to childre	IT Technical area that deman	1-3 months ago	Part funded	It attempts this through the Partner	Union Recognition

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. How long union member?	Q. 5 What union?.	Q. 6. Benefits of Union Membership	Q. 7. Disadvs. of union membership?	Q. 8. What % of salary attrib. To union?	Q. 9. Is there a staff assoc?	Q. 10. Benefits of staff assoc?	Q. 11. Who would represent you if problems at work?	Q. 12. Hours at work per week	Q. 13. How important is prof devel?	Q. 14. How important is personal devel?	Q. 15. Describe Work Environment	Q. 16. Training	Q. 17. Is Training Funded?	Q. 18. Does union contribute /promote prof dev?	Q.19 Benefits/advantages of union membership
						Insurance, Reduced Car and House Insurance. A Big Family looking out for my rights.								n and reading (b) Circle of Life, family, spouse, work and own space time	ds constant supervision			ship forum	
10	M	IT Manager, Payroll /HR	Third Level (Degree)	12 months	AHCPS	Cheaper insurance, support for grievances	none	0-5%	No		AHCPS	40-44	(a) No (b) No (c) No	(a) (b) Technical education	OK	1-3 months ago	yes	no	No
11	F	Clerical Officer Programmer/ Operator	Third Level (Dip)	17 years	CPSU	Medical/ dental/optical rebates, assistance with negotiating work structures	Unsure if some % of union contributions are used to fund political parties	0-5%	No		Union committee member	30-34	(a) No (b) No (c) No	(a) gardening, walking, theatre (b) confidence building, presentation skills	pleasant	4-6 months ago	yes	yes	

No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. How long union member?	Q. 5 What union?.	Q. 6. Benefits of Union Membership	Q. 7. Disadvs. of union membership?	Q. 8. What % of salary attrib. To union?	Q. 9. Is there a staff assoc?	Q. 10. Benefits of staff assoc?	Q. 11. Who would represent you if problems at work?	Q. 12. Hours at work per week	Q. 13. How important is prof devel?	Q. 14. How important is personal devel?	Q. 15. Describe Work Environment	Q. 16. Training	Q. 17. Is Training Funded?	Q. 18. Does union contribute /promote prof dev?	Q.19 Benefits/advantages of union membership
12	M	Technical Support Specialist	Secondary	15 years	PSEU	Cheaper Home, Motor & Travel insurances, personal loans & free legal consultation	None	0-5%	No		Any member of the Union branch committee	40-44	(a) No (b) Yes (c) Yes	(a) yes (b) ??	Busy, sometimes stressful	1-3 months ago	yes	Don't know	Does trade membership jeopardize promotional or career prospects? How effective are trade unions in the modern era? Are trade union leaders too close to management? Are trade unions neutered by the

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. How long union member?	Q. 5 What union?.	Q. 6. Benefits of Union Membership	Q. 7. Disadvs. of union membership?	Q. 8. What % of salary attrib. To union?	Q. 9. Is there a staff assoc?	Q. 10. Benefits of staff assoc?	Q. 11. Who would represent you if problems at work?	Q. 12. Hours at work per week	Q. 13. How important is prof devel?	Q. 14. How important is personal devel?	Q. 15. Describe Work Environment	Q. 16. Training	Q. 17. Is Training Funded?	Q. 18. Does union contribute /promote prof dev?	Q.19 Benefits/advantages of union membership
																			various Industrial relations acts? Are trade unions good value for money? Are the leaders of trade unions more interested in maximizing members subscriptions instead of fully representing their

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. How long union member?	Q. 5 What union?.	Q. 6. Benefits of Union Membership	Q. 7. Disadvs. of union membership?	Q. 8. What % of salary attrib. To union?	Q. 9. Is there a staff assoc?	Q. 10. Benefits of staff assoc?	Q. 11. Who would represent you if problems at work?	Q. 12. Hours at work per week	Q. 13. How important is prof devel?	Q. 14. How important is personal devel?	Q. 15. Describe Work Environment	Q. 16. Training	Q. 17. Is Training Funded?	Q. 18. Does union contribute /promote prof dev?	Q.19 Benefits/advantages of union membership
																			members interests?
13	M	Technical Support Specialist		21 years	Public Service Executive Union	In terms of material benefits, there's limited dental and optical. There's also a preferential on Motor Insurance for members, More generally, there's obviously the fact of representation in negotiations with the Company	I don't see any immediate disadvantage, but then I've been a member of a union throughout my career, and I'd rather be in one than not.				My local Union rep, or HR department, depending on the problem.	Three months?	(a) No (b) No (c) No	(a) Reading, writing (fiction), cinema, music (Jazz) (b) If I understand correctly, I'd like to learn a couple more languages and take a writing course of some description	Comfortable enough, if a little short on space.		Yes, with certain restrictions. There's a condition that the course undertaken must be directly relevant to one's job in order to qualify	Not to my knowledge	Not that I can think of.
14	M	Head	Third	35	TSSA	A support	None	0-5%	No		Myself	50-54	(a) No	(a)Vol	Friendl	18+	Yes	Yes	No

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. How long union member?	Q. 5 What union?.	Q. 6. Benefits of Union Membership	Q. 7. Disadvs. of union membership?	Q. 8. What % of salary attrib. To union?	Q. 9. Is there a staff assoc?	Q. 10. Benefits of staff assoc?	Q. 11. Who would represent you if problems at work?	Q. 12. Hours at work per week	Q. 13. How important is prof devel?	Q. 14. How important is personal devel?	Q. 15. Describe Work Environment	Q. 16. Training	Q. 17. Is Training Funded?	Q. 18. Does union contribute /promote prof dev?	Q.19 Benefits/advantages of union membership
		of IT	Level (Dip)	years		structure in the event of problems					or TSSA		(b) No (c) No	untary Work &n Sport (b) Interpersonal skills	y	months			

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Appendix G

Results of Pilot Study for IT Workers Dublin, Ireland - Non-union

No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. Staff Assoc.	Q. 5. Benefits of Staff Assoc.	Q. 6. Staff Assoc. Promote Prof Devel?	Q. 7. Member of Prof Comp Org?	Q. 8. Details of Member?	Q. 9. Repre-sentation?	Q. 10. External Repre-sentation?	Q. 11. Details of Exter. Repre.	Q. 12. Import. of Prof Devel?	Q. 13. Hobbies	Q. 14. Salary	Q. 15. Hours at work per week	Q. 16. Describe Work Environment	Q. 17. Training	Q. 18. Is training funded?
1	M	Project Manager	MBA	Yes			No		No one outside of company	No		(a) No (b) No, never again (c) No	(a) Keeping fit at the gym three times a week (b) Non career education Artistic pursuits (music, writing) Sports Stress management Work/life balance	Don't know	45-49	Pleasant	4-6 months	Yes
2	F		Primary												30-34		Never received training	
3	M	Application Developer Director	Third Level Cert	No			No		Colleague	No		(a) No (b) No (c) No		No	35-39	Poor	10-12 months	No
4	F	Project Manager	Primary B.E Engineering	Yes	None	No	No		My Manager	No				Don't Know	40-44	Fine	1-3 months	Yes

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. Staff Assoc.	Q. 5. Benefits of Staff Assoc.	Q. 6. Staff Assoc. Promote Prof Devel?	Q. 7. Member of Prof Comp Org?	Q. 8. Details of Member?	Q. 9. Repre-sentation?	Q. 10. External Repre-sentation?	Q. 11. Details of Exter. Repre.	Q. 12. Import. of Prof Devel?	Q. 13. Hobbies	Q. 14. Salary	Q. 15. Hours at work per week	Q. 16. Describe Work Environment	Q. 17. Training	Q. 18. Is training funded?
5	M	Customer Support Engineer	Third Level Degree	No			No			No		(a) (b) (c) No	(a) Yes (b) Music, sport, travel	Don't know	35-39	Comfortable	1-3 months	Yes
6	M	Line Manager	Third Level Degree	Yes	S&S – Discounts to organized social events	No	No		My Manager	No		(a) No (b) No (c) No	(a)Sport, allows me to switch off from work (b) Guidelines to help you direct your career path?	Yes	40-44	Relaxed, but concerned for job future	13-15 months	Yes
7	M	Engineer	Third level degree	No			No		No one	Yes	The company gets a lot more from me than I get from them	(a) IEEI (b) No (c) No	(a) Reading, time with family	No	40-44	Great	1-3 months	Yes
8	F	Central Resource Manager	Primary Masters in Elect. Engineering	No			No		My boss directly depending on problem. Otherwise HR.	No		(a) MIEI (b) Yes hope to change careers via a postgraduate course (c) Change careers	(a) Nighttime courses, music, sports, education, health programs (b) Education in Medical area, Softskills	Don't Know	35-39	People-oriented – working in the education side of Telecommunications – coordination role. This is	4-6 months	Yes

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. Staff Assoc.	Q. 5. Benefits of Staff Assoc.	Q. 6. Staff Assoc. Promote Prof Devel?	Q. 7. Member of Prof Comp Org?	Q. 8. Details of Member?	Q. 9. Repre-sentation?	Q. 10. External Repre-sentation?	Q. 11. Details of Exter. Repre.	Q. 12. Import. of Prof Devel?	Q. 13. Hobbies	Q. 14. Salary	Q. 15. Hours at work per week	Q. 16. Describe Work Environment	Q. 17. Training.	Q. 18. Is training funded?
																a good working environment although with the economical issue hasn't helped in the last year. Mood isn't so good at work – lots of uncertainty		
9	M	Programme Manager	Third Level Degree	No			No		Me & a lawyer I guess	No		(a) No (b) No (c) No	**(a) Photography, movies, reading, foot**	Yes	40-44	Good	18+ months	If successful, yes

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. Staff Assoc.	Q. 5. Benefits of Staff Assoc.	Q. 6. Staff Assoc. Promote Prof Devel?	Q. 7. Member of Prof Comp Org?	Q. 8. Details of Member?	Q. 9. Repre-sentation?	Q. 10. External Repre-sentation?	Q. 11. Details of Exter. Repre.	Q. 12. Import. of Prof Devel?	Q. 13. Hobbies	Q. 14. Salary	Q. 15. Hours at work per week	Q. 16. Describe Work Environment	Q. 17. Training	Q. 18. Is training funded?
													ball (b) Parenting, conflict management, fitness training					
10	M	Consultant	Third Level Degree	No			Yes	IEEE	Self	No		(a) IEEE (b) Yes (c) Yes		Yes	40-44	Average	4-6 months	Yes
11	F	Technical Instructor	Third Level Degree	No			No		My Manager	No		(a) (b) (c) Yes	(a) Singing, swimming (b) Positive thinking, time management, managing confrontation, saying what you think	Don't know	30-34	Good to Excellent	1 to 3 months	Yes, but each situation judged on merit
12	F	Telecoms Operation & Maintenance Consultant	Third Level Degree	Yes	Not a member but one benefit is payment for overtime	Not that I'm aware of	No		Depends on problem – either line manager, Human Resources or private solicitor	No		(a) No (b) No (c) Yes, within the company – Discussed with line manager each year	(a) Gardening, badminton (b) Night courses on hobbies. More exercise	Yes	40-44	Informal. Level of activity is either too busy or not busy at all	7-9 months	Yes, although currently limited by budget constraints
13	M	Senior Technical Instructor	Third Level degree	No			No		My union (separate member)	No		(a) No (b) Yes (c) Yes	(a) Music, sports, reading	Yes	30-34	Friendly, Flexible	7-9 months	Yes

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. Staff Assoc.	Q. 5. Benefits of Staff Assoc.	Q. 6. Staff Assoc. Promote Prof Devel?	Q. 7. Member of Prof Comp Org?	Q. 8. Details of Member?	Q. 9. Repre-sentation ?	Q. 10. External Repre-sentation ?	Q. 11. Details of Exter. Repre.	Q. 12. Import. of Prof Devel?	Q. 13. Hobbies	Q. 14. Salary	Q. 15. Hours at work per week	Q. 16. Describe Work Environment	Q. 17. Training	Q. 18. Is training funded ?
14	M		Third Level Degree												30-34			
15	M	Test Coordinator	PhD	No			No		Manager	No		(a) No (b) Yes (c) Yes	(a) Hockey, Squash (b) More free time, less emphasis on work	No	40-44	Good but a lot of pressure	13-15 months	Yes
16	M	IT Specialist	Third Level Degree	No			No		Me or my manager	No		(a) (b) No (c) No	(a) Going out	Yes	50-54	Busy but interesting	7-9 months	Yes
17	M	Training/ Manager/ Organiser /deliverer – general dogs body	Third Level Cert	No			Yes	Macromedia Certified Instructor		No		(a) Macromedia Certified Instructors (b) Only if necessary (c) Not really	(a) Sporty type, football, cycling, swimming in sea (b) Not sure	Don't Know	40-44	Quite ok	10-12 months	Might be, not sure

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Appendix G

Results of Pilot Study for IT Workers Silicon Valley, California, USA - Non-union

No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. Staff Assoc.	Q. 5. Benefits of Staff Assoc.	Q. 6. Staff Assoc. Promote Prof Devel?	Q. 7. Member of Prof Comp Org?	Q. 8. Details of Member?	Q. 9. Repre-sentation?	Q. 10. External Repre-sentation?	Q. 11. Details of Exter. Repre.	Q. 12. Import. of Prof Devel?	Q. 13. Hobbies	Q. 14. Salary	Q. 15. Hours at work per week	Q. 16. Describe Work Environment	Q. 17. Training	Q. 18. Is training funded?
1	M	IT Press Officer	Third Level (Degree)	No			No		Myself or attorney	Yes	In a few jobs I've had *serious* disagreements with managers *that led* to my termination. I could have done with representation but *didn't* chose to involve an attorney – *too* difficult to get anywhere and it *can ruin* your reputation.	(a) No (b) No (c) No	(a) Going to the races, going out *with friend* for meals, having friends 'round (b)	Yes	30-34	At the moment I mainly work from home on a part-time basis so it's fine.	Never received training	Not as a contract worker
2	M	Hardware	Master	No			No		Myself	No		(a) No	(a) Cinema,	Yes	40-44	Pressur	4 to 6	I think

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. Staff Assoc.	Q. 5. Benefits of Staff Assoc.	Q. 6. Staff Assoc. Promote Prof Devel?	Q. 7. Member of Prof Comp Org?	Q. 8. Details of Member?	Q. 9. Repre-sentation?	Q. 10. External Repre-sentation?	Q. 11. Details of Exter. Repre.	Q. 12. Import. of Prof Devel?	Q. 13. Hobbies	Q. 14. Salary	Q. 15. Hours at work per week	Q. 16. Describe Work Environment	Q. 17. Training	Q. 18. Is training funded?
		Engineer	s in engineering from Stanford									(b) No (c) I plan to move out of IT in the future. I'm drawn to teaching so that might be the way.	Swimming, Meeting friends (b)			ized. Deadlines coming up in 8 weeks so a lot of hours need to be put in.	months	so.
	M	Software Engineer	Third Level (Degree)	No			No		Myself	Yes	The last job I worked in was particularly stressful. I wa singled out feel unfairly by a manager and life became hell.	(a) No (b) No (c) Hope to move into personal development training. I think this would suit my interests better. I'm looking for the right course at the moment.	(a) Tennis, personal development, travel and good food (b) What do I want to achieve in life? What do I need to do to achieve these goals? How can I find the balance between work and leisure? What can I build into my life to stay healthy in mind and	Yes	30-34	Just contract at the moment. Ok	10-12 months	No

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. Staff Assoc.	Q. 5. Benefits of Staff Assoc.	Q. 6. Staff Assoc. Promote Prof Devel?	Q. 7. Member of Prof Comp Org?	Q. 8. Details of Member?	Q. 9. Repre-sentation ?	Q. 10. External Repre-sentation ?	Q. 11. Details of Exter. Repre.	Q. 12. Import. of Prof Devel?	Q. 13. Hobbies	Q. 14. Salary	Q. 15. Hours at work per week	Q. 16. Describe Work Environment	Q. 17. Training	Q. 18. Is training funded ?
													body?					
4	M	Technical Writer	Third Level (Degree)	No			No		Myself	No		(a) No (b) No (c) Just to keep working	(a) Light opera, art appreciation, socializing, travel (b)	Don't Know	30-34	Part-time work at present . It leaves me time for other things.	Never received training	No\
5	M	Senior Technical Writer	PhD	No			No		I would	No		(a) No (b) No (c) No	(a) travel, time with friends and family (b)	Yes	40-44	Stressful as our product is being released this month. A lot of work to do in a short space of time.	Never received training	No
6	M	Product Testing Manager	Masters (Computer Science)	No					Myself or my Manager	No		(a) No (b) No (c) No	(a) Travel, family, reading, playing guitar (b)	Yes	40-44	Very good work environment. Great manager –	4-6 months	Yes, I'd say so

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. Staff Assoc.	Q. 5. Benefits of Staff Assoc.	Q. 6. Staff Assoc. Promote Prof Devel?	Q. 7. Member of Prof Comp Org?	Q. 8. Details of Member?	Q. 9. Repre-sentation?	Q. 10. External Repre-sentation?	Q. 11. Details of Exter. Repre.	Q. 12. Import. of Prof Devel?	Q. 13. Hobbies	Q. 14. Salary	Q. 15. Hours at work per week	Q. 16. Describe Work Environment	Q. 17. Training	Q. 18. Is training funded?
																everybody is really into the products we create and test.		
7	F	Technical Writer (Help)	Third level degree	No			No		I don't know	No		(a) No (b) No (c) I want to move into project management.	(a) Socializing, good food, travel	Yes	45-49	A lot of stress now because we've to get all our docs out by the end of the month.	Never received training	Don't know
8	M	Senior Technical Writer	Third Level (degree)	No			No		I suppose myself	No		(a) No (b) No (c) No	(a) Books, travel, art, cinema (b)	Yes	40-44	It's ok but will get more stressful when I get nearer to doc release.	Never received training	Don't think so
9	M	Network Consultant	PhD	No			No		Since it's a contract I'd be	No		(a) No (b) No (c) No	(a) Cars, Books, films, cooking	Don't know	30-34	Ok, not wonderful but better	Never received trainin	No

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. Staff Assoc.	Q. 5. Benefits of Staff Assoc.	Q. 6. Staff Assoc. Promote Prof Devel?	Q. 7. Member of Prof Comp Org?	Q. 8. Details of Member?	Q. 9. Repre-sentation ?	Q. 10. External Repre-sentation ?	Q. 11. Details of Exter. Repre.	Q. 12. Import. of Prof Devel?	Q. 13. Hobbies	Q. 14. Salary	Q. 15. Hours at work per week	Q. 16. Describe Work Environment	Q. 17. Training	Q. 18. Is training funded ?
									out							than most	g	
10	M	Technical Writer	Third Level Degree	No			No		My manager	No		(a) No (b) No (c) To move into project management	(a) Eating out, spending time with friends	Don't know	45-49	A lot of work to do but I get on well with management so I feel it's a good place to work.	Never received training	Don't Know
11	F	Technical Writer	Third Level Degree	No			No		Myself	Yes	Problems with a new manager. I stepped down as project manager.	(a) No (b) No (c) No	(a) Family, Reading	Yes	45-49	Tough deadlines. Too much work.	Never received training	Don't Know
12	F	Training Manager	Third Level Degree	No			No		?	No		(a) No (b) No (c) To work in a more established company . To stay in manage	(a) Eating out, time with husband	Yes	45-49	Very busy but I enjoy my work. Sometimes hard to make a differe	13 - 15 months	Yes if I wanted extra training

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. Staff Assoc.	Q. 5. Benefits of Staff Assoc.	Q. 6. Staff Assoc. Promote Prof Devel?	Q. 7. Member of Prof Comp Org?	Q. 8. Details of Member?	Q. 9. Repre-sentation?	Q. 10. External Repre-sentation?	Q. 11. Details of Exter. Repre.	Q. 12. Import. of Prof Devel?	Q. 13. Hobbies	Q. 14. Salary	Q. 15. Hours at work per week	Q. 16. Describe Work Environment	Q. 17. Training	Q. 18. Is training funded?
												ment.				nce but mostly my suggestions are carried through.		
13	M	Software Manager	Third Level degree	No			No			No		(a) No (b) No (c) To keep on progressing upwards	(a) Travel, music, time with friends	Yes	40-44	Very good. Great bunch of people. Great product.	4-6 months	I think so
14	F	Technical Writer	Third Level Degree	No			No		Myself	Yes	I would like to have someone outside of the firm who could represent me when problems occur	(a) No (b) Yes (c) No	(a) reading, cinema, travel, walking (b) Courses I'd like to study, also to set time aside to do things I really enjoy	Yes	35-39	At times very stressful and demanding	Never received training	Yes, if relevant to the job
15	M	Documentation Project Manager	Third level Degree	No			Yes	Society for Technical Communications. A	A Human Resources Representative	Yes	Was being accused of sexual harassment, invasion	(a)STC (b) Maybe (c) No	(a) Tennis, Travel, Scrabble (b) Ways to be more effective at work.	Yes	55-59	Pressurized	Never received training	Occasionally

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. Staff Assoc.	Q. 5. Benefits of Staff Assoc.	Q. 6. Staff Assoc. Promote Prof Devel?	Q. 7. Member of Prof Comp Org?	Q. 8. Details of Member?	Q. 9. Repre-sentation?	Q. 10. External Repre-sentation?	Q. 11. Details of Exter. Repre.	Q. 12. Import. of Prof Devel?	Q. 13. Hobbies	Q. 14. Salary	Q. 15. Hours at work per week	Q. 16. Describe Work Environment	Q. 17. Training	Q. 18. Is training funded?
								technical writing professional organisation.			of privacy, and had a hostile environment complaint lodged against me, all of no merit							
16	F	Technical writer	Third Level Degree	No			No		Don't know – myself I suppose	Yes	I've had bad times at work where I was forced out of several jobs. I just got another job.	(a) No (b) No (c) No	(a)Family, cooking	Yes	40-44	I've just started this job and it feels very pressurized	Never received training	Don't know
17	M	Technical Publications Editor	Third Level Degree	No			No		I'm contracting part—time so I don't know	No		(a) No (b) No (c) No	(a) Books, film and TV, Playing scrabble	Yes	30-34	Fine when it's part-time, though I'm looking for full-time work.	Never received training	No
18	M	Developer	Third Level	No			No		I guess myself	No		(a) No (b) No	(a) Sports, music,	Yes	45-49	A good place	Never receive	Not sure

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No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. Staff Assoc.	Q. 5. Benefits of Staff Assoc.	Q. 6. Staff Assoc. Promote Prof Devel?	Q. 7. Member of Prof Comp Org?	Q. 8. Details of Member?	Q. 9. Repre-sentation ?	Q. 10. External Repre-sentation ?	Q. 11. Details of Exter. Repre.	Q. 12. Import. of Prof Devel?	Q. 13. Hobbies	Q. 14. Salary	Q. 15. Hours at work per week	Q. 16. Describe Work Environment	Q. 17. Training	Q. 18. Is training funded ?
		(Jave/HTML)	Degree									(c) To keep learning new skills, languages, packages	nightlife			to work. Interesting product and a great set of people.	d training	

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Appendix G

Results of Pilot Study for IT Workers Silicon Valley, California, USA - Union

No.	Q. 1. Gender	Q. 2. Job Title	Q. 3. Ed. Level	Q. 4. Staff Assoc.	Q. 5. Benefits of Staff Assoc.	Q. 6. Staff Assoc. Promote Prof Devel?	Q. 7. Member of Prof Comp Org?	Q. 8. Details of Member?	Q. 9. Repre-sentation?	Q. 10. External Repre-sentation?	Q. 11. Details of Exter. Repre.	Q. 12. Import. of Prof Devel?	Q. 13. Hobbies	Q. 14. Salary	Q. 15. Hours at work per week	Q. 16. Describe Work Environment	Q. 17. Training	Q. 18. Is training funded?

No data was received from IT union employees in Silicon Valley, California.

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Appendix H

Preliminary Results of Professional and Personal Development Study for IT Workers in Dublin, Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
1	M	Project manager	Third Level (Cert)	1: 110 2: 110 3: 100 4: 120 5: 130 6: 100 7: 90 8: 100 9: 130 10: 100 11: 110 12: 100 13: 100 14: 100 15: 100 16: 100 17: 100 18: 100 19: 110 20: 100 21: 100 22: 100 23: 100 24: 110 25: 100 26: 100 27: 100	Information architecture 130	No	a. On the job training b. On the job training c. Professional management internet technologies	16 to 18 months	By providing on the job training	1: 5 2: 4 3: 4 4: 5 5: 4 6: 5 7: 3 8: 3 9: 0 10: 5 11: 5 12: 4 13: 3	1: 30 2: 20 3: 16 4: 0 5: 150	1: 30 2: 90 3: 90 4: 60	1: 0 2: 0 3: 0 4: 0 5: 3 6: 0 7: 0 8: 0 9: 0 10: 4	No			Myself	1: A 2: D 3: A 4: A 5: U 6: U 7: A 8: A 9: D 10: U 11: U 12: A 13: D 14: A	a: 2 b: 2 c: 5	36-40
2	M	Developer/programmer		1:80 2: 80 3: 0 4: 100 5: 0 6:100	Hardware interfaces:	No	a. Personal reading/ research b.			1: 3 2: 5 3: 5 4: 5 5: 5 6: 3	1: 50 2: 20 3: 20 4: 0 5: 180	1: 75 2: 50 3: 50 4: 60	1: 0 2: 4 3: 5 4: 3 5: 3 6: 0	No			Myself	1: 2: 3: 4: 5: 6:	a: 20 mths b: n/a c: 2-3 yrs	

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				7: 100 8: 80 9: 50 10: 0 11: 100 12: 100 13: 00 14: 00 15: 100 16: 100 17: 100 18: 100 19: 00 20: 00 21: 00 22: 100 23:100 24: 00 25: 50 26: 50 27: 50	100		Personal reading/ research c. Programing languages			7: 5 8: 5 9: 5 10: 5 11: 3 12: 3 13: 4			7: 0 8: 0 9: 3 10: 5					7: 8: 9: 10 11 12 13 14		
3	M	Hardware/Software Engineer	Third Level (Degree)	1:100 2: 115 3: 100 4:110 5: 100 6: 100 7:100 8: 115 9: 100 10:110 11: 100 12: 100 13: 100 14: 100 15: 100 16: 100 17: 100 18: 100	Tek ecomes: 200 Project management: 150	No	a. On the job training b. Attend training courses c.	4 to 6 months	By funding external courses	1: 4 2: 5 3:5 4: 5 5: 5 6: 4 7: 5 8: 3 9: 0 10: 5 11: 4 12: 5 13: 2	1: 10 2:10 3: 10 4: 5 5: 160	1: 90 2: 50 3: 70 4: 70	1: 2 2: 4 3: 5 4: 4 5: 4 6: 2 7: 0 8: 3 9: 3 10: 4	No			Not sure	1: A 2: D 3: A 4: A 5: D 6: D 7: D 8: A 9: D 10: A 11: D 12: A 13: SD 14: D	1.2.5 yrs 2. 4 yrs 3. Don't have one	41-45

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				19: 100 20: 100 21: 100 22: 100 23:100 24: 100 25: 100 26: 100 27: 100																
4	F	Project Manager	Third Level (Degree)	1:-100 2: -100 3: -100 4:100 5: -100 6: -100 7:100 8: 100 9: 100 10:-100 11 -100 12:-100 13 -100 14:-100 15:-100 16:-100 17:-100 18 -100 19:-100 20: 100 21:-100 22:-		No	a. On the job training b. Retrain c. Re-train, mentoring, support groups	Never received traiing	Through mentoring my fellow staff	1:1 2: 5 3:4 4: 5 5: 4 6: 2 7: 4 8: 4 9: 0 10: 5 11: 0 12: 3 13: 3	1: 80 2:30 3: 30 4: 40 5: 160	1: 50 2: 55 3: 50 4: 50	1: 5 2: 4 3: 4 4: 0 5: 3 6: 5 7: 5 8: 4 9: 3 10: 5	No				1: D 2: A 3: SD 4: A 5: U 6: A 7: D 8: D 9: D 10: D 11: A 12: A 13: A 14: A	1. 6 2. 1 3. DON'T KNOW	36-40

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				100 23:- 100 24 -100 25 -100 26:- 100 27: 100																
5	M	Customer Support/ Documentation	Third Level (Dip)	1:75 2: 75 3: 00 4:125 5: 75 6: 50 7: 100 8: 100 9: 100 10: 100 11: 00 12: 00 13 00 14: 75 15: 00 16: 00 17: 00 18 100 19: 75 20: 50 21: 100 22: 75 23: 75 24: 100 25 00 26:75 27: 50		No	a. On the job training b. On the job training c.	1 to 3 months	On the job training	1:4 2: 5 3:3 4: 3 5: 2 6: 4 7: 4 8: 2 9: 3 10: 3 11: 3 12: 4 13: 2	1: 15 2: 50 3: 15 4: 15 5: 160	1:60 2: 55 3: 60 4: 50	1: 3 2: 4 3: 3 4: 0 5: 5 6: 0 7: 5 8: 5 9: 2 10: 4	Yes	Cheaper insurance and benefits	Unsure	Don't know	1: A 2: D 3: A 4: U 5: A 6: U 7: U 8: A 9: U 10: D 11: A 12: A 13: A 14 SA	1. 7 2. 1 3. 5	36-40
6	M	Hardware/Software Enginee	Third Level (Degree)	1:175 2: 160 3: 110 4:185		No	a. On the job training b.Perso	13 to 15 months	Through mentoring by	1:3 2: 5 3:5 4: 5	1: 40 2: 20 3: 40 4: 20	1:60 2: 40 3: 40 4: 60	1: 0 2: 5 3: 3 4: 3	No				1: SA 2: SD 3: A 4: A	a. 5.5 yrs b. 1 yr c. 3 yrs	46-50

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
		r		5: 160 6: 160 7: 175 8: 175 9: 175 10: 150 11: 170 12: 125 13: 100 14: 125 15: 160 16: 160 17: 100 18 125 19: 160 20: 175 21: 150 22: 160 23: 140 24: 110 25 150 26: 100 27: 100			nal Training c. Data retrieval /Manipulation		fellow staff	5: 4 6: 3 7: 5 8: 5 9: 3 10: 5 11: 3 12: 4 13: 3	5: 240		5: 5 6: 5 7: 3 8: 5 9: 0 10: 5					5: U 6: U 7: U 8: SA 9: D 10: D 11: D 12: D 13: D 14: D		
7	M	Customer support/ documentation	Third level (Degree)	1:50 2: 30 3: 10 4:60 5: 30 6: 10 7: 100 8: 120 9: 120 10: 160 11: 10 12: 10 13: 10 14: 70 15: 5 16: 40	Telecoms: 100 Distributed Systems: 100	No	a. On the job training b. In-house courses c. Distributed systems, 00 design/languages, Comms technol	1 to 3 months	By funding external courses	1:3 2: 4 3:5 4: 4 5: 3 6: 2 7: 4 8: 5 9: 0 10: 5 11: 0 12: 2 13: 3	1: 50 2: 15 3: 50 4: 10 5: 100	1:90 2: 30 3: 30 4: 70	1: 0 2: 4 3: 3 4: 2 5: 3 6: 2 7: 2 8: 2 9: 3 10: 4	Yes	Protection in case of problems	No	Union	1: D 2: A 3: A 4: U 5: A 6: U 7: SD 8: U 9: A 10: D 11: A 12: A 13:SA 14: A	a. 8 yrs b. 4 yrs c. 5 yrs	< 30

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				17: 10 18 120 19: 60 20: 10 21: 40 22: 10 23: 10 24: 10 25 10 26: 10 27: 10			ogy													
8	M	Project Manager	Post Graduate	1:40 2: 120 3: 0 4:150 5: 120 6: 80 7: 160 8: 110 9: 20 10: 160 11: 50 12: 20 13: 20 14: 110 15: 0 16: 90 17: 0 18 110 19: 140 20: 110 21: 120 22: 110 23: 110 24: 90 25: 0 26: 20 27: 0		No	a. Personal reading/ research b. Training c. Management informations systems	13 to 15 months	By funding external courses	1:4 2: 5 3:3 4: 4 5: 3 6: 5 7: 3 8: 3 9: 3 10: 5 11: 4 12: 5 13: 3	1: 50 2: 110 3: 10 4: 0 5: 160	1:80 2: 85 3: 85 4: 70	1:4 2: 5 3: 4 4: 3 5: 4 6: 4 7: 0 8: 5 9: 3 10: 4	No				1: D 2: A 3: A 4: A 5: A 6: D 7: D 8: D 9: D 10: A 11: A 12: A 13:D 14: A	a. 2.5yrs b. 3.75 yrs c. 4 yrs	41-45
9	F	Hardwar	Third	1:80		No	a. On	4 to 6	Throug	1:4	1: 200	1:40	1:3	Yes	Union?	No	Trade	1: A	a. 9 yrs	46-50

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
		e/Software Engineer	Level (Degree)	2: 80 3: 0 4:120 5: 0 6: 80 7: 100 8: 110 9: 120 10: 110 11: 100 12: 0 13: 0 14: 0 15: 30 16: 50 17: 90 18 : 90 19: 90 20: 0 21: 0 22: 0 23: 80 24: 0 25: 0 26: 0 27: 70			the job training b. Training $ on the job training c. Networks	months	h mentoring by fellow staff	2: 5 3:3 4: 3 5: 3 6: 3 7: 3 8: 3 9: 3 10: 2 11: 3 12: 4 13: 2	2: 50 3: 10 4: 0 5: 180	2: 30 3: 40 4: 20	2: 5 3: 5 4: 3 5: 4 6: 4 7: 3 8: 2 9: 3 10: 4		There is one in my organisation. Some protection during layoffs. Normal trade union benefits.		union. I am not a member. No representation if problem at work	2: D 3: SA 4: D 5: A 6: U 7: U 8: A 9: D 10: D 11: D 12: U 13: U 14: U	b. 6.5 yrs c. 5 yrs	
10	F	Hardware/Software Engineer	Post Graduate	1:50 2: 200 3: 140 4:120 5: 120 6: 50 7: 80 8: 50 9: 50 10: 200 11: 200 12: 50 13: 50	Intelligent Networks: 180 Transmission Systems: 150	No	a. On the job training b. On the job training c. Data networks	1 to 3 months	By providing on the job training	1:4 2: 5 3:5 4: 5 5: 4 6: 4 7: 4 8: 5 9: 4 10: 5 11: 4 12: 4 13: 4	1:6 2: 40 3: 16 4: 0 5: 37.5X4+loads (160)	1:50 2: 60 3: 50 4: 70	1:4 2: 5 3: 4 4: 3 5: 4 6: 5 7: 5 8: 5 9: 4 10: 5	No			I don't know	1: SA 2: D 3: D 4: SA 5: SA 6: A 7: A 8: SA 9: D 10: D 11: A 12: A 13: U	a. 4.5 yrs b. 2 yrs c. 4 yrs	41-45

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				14: 50 15: 50 16: 50 17: 50 18: 150 19: 120 20: 140 21: 150 22: 50 23: 90 24: 50 25: 120 26: 50 27: 50	Mobile Networks: 200 Fixed networks: 180													14: A		
11	M	Programmer/Developer	Third Level (Degree)	1:100 2: 50 3: 50 4:100 5: 120 6: 100 7: 150 8: 150 9: 150 10: 200 11: 120 12: 80 13: 80 14: 90 15: 80 16: 80 17: 50 18: 120 19: 150 20: 150 21: 150 22: 100 23: 100 24: 80 25: 70		Yes	a. Personal reading/research b. Training and research c. technical areas directly related to my job: Data networks	1 to 3 months	By funding courses	1:4 2: 4 3:5 4: 5 5: 4 6: 3 7: 4 8: 5 9: 4 10: 5 11: 4 12: 5 13: 4	1:48 2: 32 3: 30 4: 40 5: 160	1:50 2: 60 3: 50 4: 70	1:4 2: * 3: * 4: * 5: * 6: * 7: * 8: * 9: 4 10: *	Yes	None, I am not a member	N/a	Myself or my solicitor	1: D 2: A 3: A 4: D 5: A 6: A 7: A 8: U 9: U 10: U 11: A 12: A 13: A 14: A		46 – 50

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				26: 70 27: 70																
12	M	Hardware/Software Engineer	Thirs Level (Cert)	1:150 2: 100 3: 75 4: 200 5: 300 6: 7: 75 8: 75 9: 200 10: 200 11: 300 12: 125 13: 14: 100 15: 100 16: 125 17: 18: 150 19: 200 20: 125 21: 150 22: 100 23: 100 24: 125 25: 26: 27: 25		Yes	a. Personal reading/ research b. Self-taught c. Acquiring new software skill to keep pace with demand, alternatively change career	10 to 12 months		1:4 2: 4 3:2.5 4: 3.5 5: 3 6: 3.5 7: 2.5 8: 2 9: 3.5 10: 4 11: 3 12: 4 13: 2.5	1:50 2: 90 3: 15 4: 0 5: 140		1: 2:4* 3: 1 4: 1 5: 2.5 6: 1 7: 1 8: 3 9: 1 10: 4	No			No-one	1: A 2: A 3: U 4: U 5: U 6: D 7: A 8: A 9: D 10: A 11: D 12: U 13: D 14 SD		41-45
13	M	Project Manager	Post graduate	1:200 2: 200 3: 60 4: 200 5: 60 6: 7: 200 8: 200 9: 200 10: 200	Messaging: 200	Yes	a. Personal reading/ research b. Personal reading/ research	4 to 6 months	By funding external courses	1:5 2: 5 3:2 4: 3 5: 1 6: 3 7: 1 8: 5 9: 5 10: 5	1:5 2: 10 3: 0 4: 10 5: 200	1: 50 2: 100 3: 25 4: 50	1:3 2:4 3: 3 4: 3 5: 3 6: 0 7: 3 8: 3 9: 0 10: 2	No			Self	1: SA 2: U 3: D 4: SA 5: A 6: SA 7: U 8: A 9: U 10: A	a. 7 yrs b. 4 yrs c. 5 yrs	46-50

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				11: 100 12: 100 13: 14: 200 15: 50 16: 17: 18: 200 19: 33 20: 21: 200 22: 23: 200 24: 100 25: 26: 27:			c. Operating systems, algorithms and data structures, database & information retrieval, programming languages			11: 5 12: 5 13: 1								11: U 12: A 13: U 14 :U		
14	M	Developer/Programmer	Third Level (Degree)	1:400 2: 300 3: 50 4: 500 5: 200 6: 50 7: 400 8: 400 9: 400 10: 300 11: 100 12: 50 13: 50 14: 100 15: 100 16: 100 17: 50 18: 200 19: 200	Strategic analysis of emerging technologies: 400	No	a. Personal reading/ research b Personal reading/ research c. New technologies, architecture	22 to 24 months	Through mentoring by fellow staff	1:5 2: 5 3:4 4: 5 5: 3 6: 3 7: 4 8: 5 9:5 10: 4 11: 3 12: 4 13: 3	1:30 2: 150 3: 30 4: 30 5: 160	1: 25 2: 100 3: 90 4: 60	1:0 2:3 3: 3 4: 0 5: 5 6: 3 7: 3 8: 3 9: 3 10: 5	No			My superior	1: D 2: A 3: SA 4: D 5: A 6: A 7: U 8: D 9: A 10: D 11: A 12 SA 13:SA 14 SA	a. 2 yrs b. 5 yrs c. as long as it lasts	36-40

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				20: 200 21: 50 22: 50 23: 50 24: 50 25: 50 26: 50 27: 50																
15	M	Project manager	Third level (Degree)	1:120 2: 90 3: 70 4: 100 5: 200 6: 100 7: 150 8:180 9: 200 10: 200 11: 150 12: 90 13: 70 14: 90 15: 80 16: 80 17: 80 18: 300 19: 100 20: 90 21: 180 22: 80 23: 100 24: 70 25: 60 26: 90 27: 80		No	a. On the job training b. On the job training, background reading c. 3G Telecom technologies	1 to 3 months	By fundung external courses	1:4 2:5 3:4 4: 3 5: 3 6: 2 7: 4 8: 3 9:3 10: 5 11: 4 12: 4 13: 3	1:70 2: 100 3: 40 4: 25 5: 200	1: 40 2: 80 3: 90 4: 70	1:3 2:4 3: 4 4: 2 5: 4 6: 3 7: 4 8: 5 9: 3 10: 4	Yes	S&S activities	The company does, not the association	My manager, HR or myself	1: A 2: U 3: A 4: U 5: A 6: D 7: U 8: A 9: A 10: U 11 SA 12: A 13 SA 14 U	a.10 yrs b. c. 2 yrs	46-50
16	M	Hardware/Software Enginee	Third Level (cert)	1:200 2: 200 3: 0 4: 200	Java, ejb, Delp	No	a. Personal reading/	22 to 24 months	Through mentoring by	1: 2:5 3:5 4: 3	1:15 2: 80 3: 15 4: 10	1: 30 2: 40 3: 50 4: 30	1:0 2:0 3: 0 4: 0	No				1: D 2: A 3: A 4: D	a.8 months b. 2 years	36-40

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
		r		5: 150 6: 150 7: 200 8:300 9: 200 10: 200 11: 150 12: 0 13: 0 14: 0 15: 100 16: 0 17: 0 18: 0 19: 150 20: 150 21: 200 22: 200 23: 0 24: 0 25: 0 26: 0 27: 0	hi, xml, linux		research b Net c. Web services		fellow staff	5: 2 6: 5 7: 3 8: 2 9:4 10: 4 11: 0 12: 2 13: 3	5: 160		5: 2 6: 0 7: 0 8: 2 9: 0 10: 2					5: SD 6: U 7: D 8: D 9: U 10: D 11 U 12: A 13 D 14 SD	c. depends	
17	M	Customer Support/ Documentation	Cert	1:0 2: 50 3: 2 4: 0 5: 50 6: 0 7: 80 8:20 9: 30 10: 20 11: 50 12: 1 13: 0 14: 0 15: 0 16: 30		No	a. Personal reading/ research b Net c.	22 to 24 months	By providing on the job training	1:1 2:5 3:5 4: 5 5: 3 6: 0 7: 5 8: 1 9:2 10: 4 11: 0 12: 2 13: 0	1:40 2: 30 3: 30 4: 0 5: 160	1: 20 2: 5 3: 5 4: 5	1:0 2:0 3: 0 4: 0 5: 2 6: 0 7: 0 8: 2 9: 0 10: 2	No			Self	1: SD 2: SA 3: U 4: A 5: D 6: U 7: U 8: A 9: 10: SD 11 A 12: A 13 SA 14 U	a.6 months b. 6 months c.	36-40

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				17: 5 18: 60 19: 15 20: 10 21: 0 22: 0 23: 2 24: 5 25: 0 26: 0 27: 1																
18	M	Customer Support/ Documentatio	Secondary/ High Schol	1:5 2: 5 3: 0 4: 3 5: 5 6: 0 7: 5 8:2 9: 10 10: 10 11: 10 12: 5 13: 2 14: 2 15: 10 16: 10 17: 3 18: 5 19: 5 20: 2 21: 10 22: 5 23: 5 24: 3 25: 5 26: 2 27: 2		No	a. On the job training b. c.	1 to 3 months	By providing on the job training	1:4 2:2 3. 2 4:3 5:2 6: 3 7: 2 8: 3 9:1 10: 1 11: 2 12: 3 13: 2	1:100 2: 10 3: 40 4: 3 5: 140	1: 100 2: 50 3: 75 4: 3	1:0 2:3 3: 1 4: 0 5: 0 6: 1 7: 0 8: 0 9: 2 10: .2	Yes	Nil	No	Self	1: A 2: D 3: A 4: A 5: A 6: D 7: A 8: A 9: D 10: A 11 D 12: D 13 U 14 D	a.40 yrs b. none c. life	31-35
19	F	Develop	Third	1:50	Tec	No	a. On	13 to	By	1:3	1:50	1: 50	1:4	No			Self or	1: A	a.10	31-35

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
		er/Programmer	Level (Dip)	2: 50 3: 0 4: 50 5: 0 6: 50 7: 100 8:200 9: 50 10: 50 11: 150 12: 50 13: 0 14: 0 15: 50 16: 50 17: 50 18: 50 19: 100 20: 50 21: 150 22: 150 23: 50 24: 50 25: 50 26: 50 27: 100	hnical doc methods 200 Help system, web works, robo help 200		the job training b. From instruction manuals c.	15 months	funding external courses	2:5 3. 5 4:5 5:2 6: 5 7: 5 8: 5 9:1 10:5 11: 3 12: 5 13: 4	2: 50 3: 50 4: 50 5: 140	2: 40 3: 50 4: 40	2:5 3: 4 4: 0 5: 5 6: 3 7: 4 8: 3 9: 4 10: 4				Union (Only a few of us are members and the company does not know)	2: D 3: U 4: A 5: SD 6: SD 7: SA 8: A 9: SD 10: A 11 D 12: A 13 D 14 D	yrs b. 1.5. 3. 4	
20	F	Software Engineer	Postgraduate	1:120 2: 150 3: 100 4: 150 5: 100 6: 100 7: 120 8:120 9: 120 10: 120 11: 120 12: 100 13: 100		No	a. On the job training b. Personal research c. Personal Research	Never received training	Doesn't help us acquire new skills	1:5 2:5 3. 3 4:3 5:3 6: 1 7: 2 8: 4 9:4 10:5 11: 5 12: 5 13: 3	1:40 2: 160 3: 40 4: 16 5: 184	1: 75 2: 90 3: 88 4: 50	1:4 2:4 3: 5 4: 3 5: 4 6: 4 7: 5 8: 5 9: 2 10: 5	No				1: D 2: A 3: A 4: U 5: A 6: SD 7: U 8: D 9: D 10: U 11 A 12: U 13 D	a.3 yrs b. 0 C. 4 yrs	40

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				14: 100 15: 100 16: 100 17: 100 18: 150 19: 100 20: 100 21: 100 22: 100 23: 100 24: 100 25: 100 26: 100 27: 100														14 SD		
21	M	Software Developer	Degree	1:100 2: 110 3: 100 4: 150 5: 120 6: 100 7: 110 8:140 9: 180 10: 130 11: 120 12: 100 13: 100 14: 105 15: 100 16: 100 17: 100 18: 120 19: 140 20: 100 21: 110 22: 110 23: 110 24: 100 25: 100	Requirement Analysis 130 %	No	a. On the job training b. Self – possible college c. Methodology & Engineering	Never received training	May purchase books	1:4 2:5 3. 3 4:4 5:3 6: 1 7: 2 8: 5 9:4 10:5 11: 3 12: 4 13: 4	1:60 2: 30 3: 10 4: 20 5: 100	1: 20 2: 10 3: 30 4: 10	1:1 2:4 3: 4 4: 1 5: 3 6: 0 7: 0 8: 0 9: 0 10: 4	No			Supervisor	1: A 2: SA 3: D 4: D 5: D 6: D 7: U 8: U 9: U 10: A 11 SA 12: A 13 A 14 U	a.3 yrs b. 0 C. 3 Yrs	> 40

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				26: 100 27: 100																
22	F	Sofrware Develloper	Thurd Level (Cert)	1:100 2: 100 3: 100 4: 150 5: 100 6: 100 7: 150 8:150 9: 100 10: 130 11: 150 12: 100 13: 100 14: 100 15: 100 16: 100 17: 100 18: 100 19: 100 20: 100 21: 150 22: 100 23: 100 24: 100 25: 100 26: 100 27: 100	Web Design 130 %	No	a. On the job training b. Reading c.	6 months	Mentoring	1:3 2:4 3. 3 4:4 5:3 6: 3 7: 4 8: 3 9:4 10:4 11: 2 12: 4 13: 2	1:32 2: 10 3: 8 4: 0 5: 150	1: 90 2: 70 3: 70 4: 80	1:5 2:3 3: 3 4: 4 5: 4 6: 5 7: 0 8: 0 9: 4 10: 4	No			Self	1: A 2: A 3: D 4: U 5: D 6: D 7: U 8: A 9: A 10: D 11 A 12: D 13 D 14 D	a.5 yrs b. 10 C. 4 Yrs	45

National College of Ireland

Appendix H

Preliminary Results of Professional and Personal Development Study for IT Employees in Silicon Valley, California

No.	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
1	F	Customer Support/ Dcumentation	Post Graduate	1: 20 2: 20 3: 20 4: 50 5: 20 6: 20 7: 50 8: 60 9: 20 10: 110 11: 20 12: 20 13: 00 14: 00 15: 20 16: 20 17: 20 18: 20 19: 30 20: 20 21: 120 22: 50 23: 50 24: 20 25: 00 26: 20 27: 10	Routing: 50	No	a. Personal reading/ research b. Research c. Routing	Never received training	Through mentoring by fellow staff	1: 4 2: 5 3: 3 4: 3 5: 2 6: 4 7: 4 8: 4 9: 2 10: 5 11: 3 12: 5 13: 2	1: 40 2: 60 3: 20 4: 5 5: 100	1: 45 2: 40 3: 40 4: 40	1: 3 2: 5 3: 2 4: 2 5: 5 6: 3 7: 3 8: 3 9: 3 10: 3	No			Myself	1: SA 2: SD 3: U 4: SA 5: SD 6: D 7: A 8: A 9: SD 10: D 11: D 12: A 13: U 14: U	a: 2 b: 1 c: 4	36-40
2	M	Project Manager	Post Graduate	1: 200 2: 200 3: 60 4: 200 5: 60	Messaging: 200	Yes	a. Personal reading/ research b.	4 to 6 months	By funding external courses	1: 5 2: 5 3: 2 4: 3 5: 1	1: 5 2: 10 3: 0 4: 10 5: 200	1: 50 2: 100 3: 25 4: 50	1: 3 2: 4 3: 3 4: 3 5: 3	No			Self	1: SA 2: U 3: D 4: SA 5: A	a: 7 b: 4 c: 5	46-50

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No.	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				6: 00 7: 200 8: 200 9: 200 10:200 11: 100 12: 100 13: 00 14: 200 15: 500 16: 00 17: 00 18: 200 19: 33 20: 00 21: 200 22: 00 23:200 24: 100 25: 00 26: 00 27: 00			Personal reading/ research c. Operating systems, algorithms & data structures, database & information retrieval, programming languages			6: 3 7: 1 8: 5 9: 5 10: 5 11: 5 12: 5 13: 1			6: 0 7: 3 8: 3 9: 0 10: 2					6: SA 7: U 8: A 9: U 10: A 11: U 12: A 13: U 14: U		
3	F	Project Manager	Third Level (Dip)	1:300 2: 00 3: 00 4:5200 5: 00 6: 00 7:300 8: 400 9: 00. 10:300 11: 200 12: 00 13: 00 14: 000 15: 00 16: 00 17: 00	Financing	No	a. Night classes b. Professional courses c. Financial areas	7 to 9 months	By funding external courses	1: 4 2: 5 3: 3 4: 4 5: 2 6: 3 7: 3 8: 4 9: 4 10: 5 11: 3 12: 4 13: 1	1: 75 2:225 3: 0 4: 0 5: 0	1: 80 2: 75 3: 75 4: 75	1: 4 2: 3 3: 3 4: 1 5: 3 6: 4 7: 5 8: 4 9: 3 10: 5	No			Hr Manager	1: SA 2: D 3: A 4: A 5: U 6: U 7: D 8: SA 9: SD 10: U 11: A 12: A 13: SA 14: A	1. 12 2. 2 3. 6	51-55

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				18: 00 19: 300 20: 200 21: 500 22: 300 23:100 24: 00 25: 00 26: 00 27: 00																
4	M	Project Manager	Post Graduate	1:80 2: 00 3: 00 4:90 5: 80 6: 80 7:80 8: 80 9: 80 10:80 11: 80 12: 90 13: 00 14: 00 15: 80 16: 80 17: 00 18: 00 19: 90 20: 90 21: 80 22: 90 23: 80 24: 90 25: 00 26: 00 27: 00		Yes	a. Personal reading/ research b. Personal reading/ research c. New tools such as flash., etc.	22 to 24 months	Through mentoring by fellow staff	1: 3.5 2: 5 3:3.75 4: 3 5: 2 6: 3 7: 4 8: 4 9: 5 10: 4.5 11: 4 12: 4.5 13: 4	1: 40 2:120 3: 20 4: 20 5: 200	1: 50 2: 40 3: 50 4: 55	1: 4 2: 4 3: 3 4: 3 5: 4 6: 3 7: 4 8: 3 9: 2 10: 4	No				1: U 2: A 3: U 4: U 5: A 6: U 7: U 8: U 9: U 10: U 11: A 12: A 13: A 14: A	1. 1 2. 1 3. 4	41-45
5	M	Customer	Postgraduat	1:100 2: 200		No	a. Personal	Never received	Reading	1:.5 2: 5	1: 10 2:10	1: 0 2: 25	1:0 2: 5	No			Self	1: A 2: D	1. 1 2. 1	61-65

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No.	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
		Support/ Dcumentation	e	3: 50 4:200 5: 150 6: 100 7:200 8: 100 9: 150 10: 200 11: 100 12: 100 13: 50 14: 200 15: 0 16: 100 17: 0 18: 100 19: 100 20: 0 21: 200 22: 0 23: 0 24: 0 25: 0 26: 0 27: 0		-	reading/ research b. Personal reading/ research	training		3: 4 4: 4 5: 3 6: 2 7: 1 8: 4 9: 1 10: 4 11: 3 12: 5 13: 1	3: 10 4: 10 5: 320	3: 25 4: 20	3: 5 4: 0 5: 4 6: 2 7: 2 8: 2 9: 2 10: 4					3: D 4: A 5: U 6: D 7: U 8: A 9: D 10: D 11: A 12: D 13: D 14: U	3. 2	
6	M	Customer Support/ Dcumentation	Degree	1:00 2: 00 3: 00 4:00 5:00 6: 00 7:00 8: 00 9: 00 10:00 11: 00 12: 00 13: 00 14: 00	Video editing, 100 Video compression 100	No	a. Personal reading/ research b. Personal reading/ research	Never received training	Through mentoring by fellow staff	1: 2 2: 5 3:5 4: 5 5: 5 6: 3 7: 4 8: 4 9: 0 10: 5 11: 1 12: 3 13: 4	1: 80 2:0 3: 70 4: 10 5: 0	1: 100 2: 30 3: 50 4: 40	1:04 2: 3 3: 4 4: 0 5: 4 6: 0 7: 2 8: 4 9: 5 10: 3	No			Self	1: A 2: SD 3: A 4: U 5: D 6: D 7: SA 8: SA 9: U 10: A 11: D 12: U 13: A 14: U	1. 2 2. 1 3. 2	41-45

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				15: 50 16: 00 17: 00 18: 00 19: 00 20: 00 21: 00 22: 00 23: 00 24: 00 25: 00 26: 00 27: 00																	
7	M	Customer Support/ Doc	Degree	1:00 2: 50 3: 00 4:00 5:00 6: 00 7:00 8: 00 9: 00 10:150 11: 00 12: 00 13: 00 14: 50 15: 000 16: 50 17: 00 18: 00 19: 00 20: 00 21: 00 22: 00 23: 00 24: 00 25: 00 26: 00		No	a. On the job training b. c.	4 to 6 months	By providing on the job training	1: 4 2: 4 3:3 4: 4 5: 5 6: 5 7: 2 8: 2 9: 0 10: 4 11: 0 12: 5 13: 0	1: 40 2:10 3: 40 4: 0 5: 150	1: 30 2: 0 3: 0 4: 0	1:1 2: 3 3: 2 4: 0 5: 5 6: 2 7: 1 8: 1 9: 5 10: 5	No			Attorney	1: SA 2: SD 3: SD 4: SA 5: SD 6: SD 7: SA 8: SA 9: SD 10 SA 11 SD 12:SD 13 SD 14:SD	1. 2 2. 1.5 3. 4	41-45

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				27: 00																
8	M	Customer Support/ Doc	Degree	1:00 2: 50 3: 00 4:30 5:00 6: 00 7:30 8: 30 9: 30 10:200 11: 00 12: 00 13: 00 14: 00 15: 00 16: 40 17: 00 18: 00 19: 30 20: 20 21: 20 22: 00 23: 00 24: 00 25: 00 26: 00 27: 00		No	a. Personal reading/ research b. Courses	Never received training	Through mentoring by fellow staff	1: 5 2: 5 3:3 4: 3 5: 3 6: 4 7: 2 8: 2 9: 3 10: 4 11: 4 12: 5 13: 1	1:30 2:50 3: 10 4: 0 5: 150	1: 80 2: 40 3: 40 4: 40	1:4 2: 3 3:2 4: 0 5: 5 6: 3 7: 4 8: 4 9: 3 10: 4	No			Self	1: SA 2: SD 3: U 4: A 5: D 6: D 7: A 8: SA 9: D 10: SA 11:SD 12: U 13: U 14: D	1. 1 2. 1 3. 4	46-50
9	M	Customer Support/ Doc	Degree	1:00 2: 40 3: 00 4:20 5:00 6: 00 7:30 8: 20 9: 30 10:100 11: 00		Yes	a. Night Courses b. Night Courses	4 to 6 months	On the job training	1: 5 2: 5 3:5 4: 5 5: 5 6: 5 7: 5 8: 5 9: 0 10: 5 11: 3	1: 80 2:80 3: 80 4: 10 5: 225	1: 50 2: 50 3: 75 4: 50	1:3 2: 5 3: 4 4: 3 5: 4 6: 3 7: 2 8: 2 9: 3 10: 3	No			Self	1: SA 2: SD 3: D 4: A 5: A 6: A 7: A 8: SA 9: SD 10: SA	1. 2 2. 1 3. 5	46-50

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How *does* employer help you reskill?	Q. 10 Indicate *importance* of aspects of life (0 -5)	Q. 11. Indicate *Hours spent* (per month)	Q. 12. Indicate *needs* met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				12: 00 13: 00 14: 00 15: 0 16: 20 17: 00 18: 00 19: 20 20: 20 21: 20 22: 20 23: 00 24: 00 25: 00 26: 00 27: 00						12: 5 13: 2								11: U 12: A 13: D 14: D		
10	M	Hardware/Software Engineer	Postgrad	1:120 2: 150 3: 50 4:50 5:150 6: 150 7:150 8: 150 9: 200 10:150 11: 150 12: 50 13: 20 14: 20 15: 0 16: 200 17: 00 18: 150 19: 150 20: 50 21: 00 22: 50 23: 100		Yes	a. On the job training b. Night courses	4 to 6 months	By providing on the job training	1:5 2: 5 3:3 4: 3 5: 2 6: 3 7: 2 8: 2 9: 1 10: 5 11: 3 12: 5 13: 2	1:40 2:0 3: 10 4: 10 5: 170	1: 100 2: 50 3: 60 4: 60	1:2 2: 3 3: 2 4: 1 5: 3 6: 2 7: 2 8: 2 9: 4 10: 4	Yes	Social	No	Self	1: A 2: D 3: A 4: A 5: D 6: U 7: U 8: A 9: D 10: U 11: U 12: U 13: A 14: U	1. 3 2. 5 3. 5	46-50

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No.	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				24: 50 25: 50 26: 50 27: 00																
11	M	Hardware/SoftweEngineer	Degree	1:50 2: 150 3:-00 4:100 5:00 6: 00 7:120 8: 50 9: 200 10:200 11: 100 12: 20 13: 00 14: 50 15: 0 16: 150 17: 00 18: 150 19: 100 20: 00 21: 00 22: 10 23: 00 24: 00 25: 00 26: 50 27: 50		No	a. On the job training b. Personal reading/ research	10 to 12 months	By providing on the job training	1: 5 2: 5 3:4 4: 4 5: 3 6: 3 7: 3 8: 3 9: 3 10: 5 11: 4 12: 5 13: 1	1: 20 2:50 3: 10 4: 0 5: 200	1: 70 2: 40 3: 40 4: 45	1:1 2: 2 3: 2 4: 1 5: 4 6: 2 7: 1 8: 1 9: 2 10: 3	Yes	Organizes social events	No	Self	1: SA 2: SD 3: U 4: A 5: SD 6: U 7: A 8: A 9: D 10: A 11: D 12: U 13: U 14: A	1. 2 2. 2 3. 4	46-50
12	M	Customer Support/ Doc	Degree	1:100 2:100 3: 80 4:80 5:50 6: 50 7:150 8: 150	New programming languages	No	a. Personal reading/ research b.	Never received training	By funding external courses	1: 5 2: 5 3:3 4: 3 5: 3 6: 5 7: 3 8: 3	1: 20 2:0 3: 20 4: 20 5: 200	1: 50 2: 50 3: 50 4: 50	1:1 2: 1 3: 1 4: 0 5: 5 6: 0 7: 1 8: 2	No			Self	1: A 2: D 3: A 4: A 5: A 6: A 7: D 8: A	1. 3 2. 2 3. 5	46-50

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				9: 150 10: 150 11: 150 12: 00 13: 00 14: 50 15: 0 16: 50 17: 00 18: 50 19: 150 20: 20 21: 00 22: 00 23: 00 24: 00 25: 00 26: 20 27: 00	150					9: 3 10: 5 11: 3 12: 5 13: 0			9: 1 10: 4					9: A 10: D 11: A 12: A 13: A 14: A		
13	M	Software Developer	Phd	1:130 2:120 3: 110 4:100 5:80 6: 120 7:120 8: 150 9: 150 10: 130 11: 150 12: 120 13: 130 14: 130 15: 100 16: 160 17: 120 18: 120 19: 120 20: 120	New programming languages 150	No	a. On the job training b. Reading	6 months	Mentoring	1: 5 2: 4 3:3 4: 3 5: 3 6: 3 7: 3 8: 4 9: 3 10: 4 11: 4 12: 5 13: 1	1: 50 2:0 3: 10 4: 10 5: 170	1: 75 2: 45 3: 35 4: 40	1:1 2: 2 3: 3 4: 2 5: 3 6: 2 7: 1 8: 1 9: 2 10: 3	No			Myself	1: A 2: D 3: D 4: A 5: D 6: D 7: A 8: A 9: SD 10: A 11 SA 12: U 13 U 14 D	a.3 yrs b. 0 C. 5 Yrs	> 50

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No.	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
				21: 80 22: 120 23: 50 24: 140 25: 100 26: 120 27: 100																
14	M	Project Manager	Post Graduate	1:100 2:120 3: 150 4:80 5:160 6: 80 7:100 8: 150 9: 100 10: 80 11: 120 12: 50 13: 120 14: 0 15: 0 16: 100 17: 0 18: 100 19: 120 20: 120 21: 0 22: 0 23: 0 24: 140 25: 120 26: 0 27: 0		No	a. On the job training b. Personal reading/ research	6 months	Mentoring	1: 5 2: 5 3:4 4: 3 5: 2 6: 3 7: 3 8: 3 9: 3 10: 4 11: 4 12: 5 13: 0	1: 20 2:50 3: 20 4: 0 5: 170	1:100 2: 80 3: 80 4: 80	1:5 2: 3 3: 4 4: 0 5: 3 6: 0 7: 5 8: 5 9: 0 10: 3	Social club			Manager	1: A 2: D 3: A 4: A 5: A 6: A 7: D 8: A 9: A 10: D 11 A 12: A 13 A 14 SA	a.12 yrs b. 3 C. 15 Yrs (depends on the job)	45
15	F	Customer Support/ Documentation	Third Level (Cert)	1:00 2:0 3:0 4: 120 5:0		No	a. On the job training b. Reading	6 months	By funding external courses	1: 4 2: 5 3:3 4: 3 5: 3	1: 30 2:10 3: 10 4: 0 5: 160	1: 70 2: 50 3: 50 4: 40	1:5 2: 3 3: 1 4: 0 5: 3	Don't know			Me	1: A 2: D 3: A 4: U 5: U	a.4yrs b. 1 C. 7	40

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14. Staff Assoc?	Q. 15. If yes (Q14), List benefits	Q. 16. If yes (Q14), is Prof Devel promoted?	Q. 17 Who would repress. You if work problem?	Q. 18. Which best describes work environ	Q. 19 Time in employment	Q. 20 Hours per week at work
		ntation		6:0 7:0 8:0 9: 0 10: 120 11: 100 12: 0 13: 0 14: 0 15: 0 16: 0 17: 0 18: 120 19: 120 20: 0 21: 0 22: 0 23: 0 24: 0 25: 0 26: 0 27: 0			/courses c.			6: 5 7: 3 8: 1 9: 1 10: 4 11: 3 12: 4 13: 2			6: 3 7: 4 8: 4 9: 2 10: 4					6: U 7: U 8: A 9: D 10: U 11 A 12: D 13 A 14 A		

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Appendix I

Results of Main Study of Professional and Personal Development of IT Workers in Dublin, Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
1	M	Project manager	Third Level (Cert)	1: 110 2: 110 3: 100 4: 120 5: 130 6: 100 7: 90 8: 100 9: 130 10: 100 11: 110 12: 100 13: 100 14: 100 15: 100 16: 100 17: 100 18: 100 19: 110 20: 100 21: 100 22: 100 23: 100 24: 110 25: 100 26: 100 27: 100	1. Hardware interfaces 130	No	a. On the job training b. On the job training c. Professional management internet technologies	16 to 18 months	By providing on the job training	1: 5 2: 4 3: 4 4: 5 5: 4 6: 5 7: 3 8: 3 9: 0 10: 5 11: 5 12: 4 13: 3	1: 30 2: 20 3: 16 4: 0 5: 150	1: 30 2: 90 3: 90 4: 60	1: 0 2: 0 3: 0 4: 0 5: 3 6: 0 7: 0 8: 0 9: 0 10: 4	Myself –	1: A 2: D 3: A 4: A 5: U 6: U 7: A 8: A 9: D 10: U 11: U 12: A 13: D 14: A	a: 2 b: 2 c: 5	36-40
2	M	Developer/programmer		1:80 2: 80 3: 0 4: 100 5: 0 6:100	1. Hardware interfaces: 100	No	a. Personal reading /research			1: 3 2: 5 3: 5 4: 5 5: 5 6: 3	1: 50 2: 20 3: 20 4: 0 5: 180	1: 75 2: 50 3: 50 4: 60	1: 0 2: 4 3: 5 4: 3 5: 3 6: 0	Myself	1: 2: 3: 4: 5: 6:	a: 20 mths b: n/a c: 2-3 yrs	

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				7: 100 8: 80 9: 50 10: 0 11: 100 12: 100 13: 00 14: 00 15: 100 16: 100 17: 100 18: 100 19: 00 20: 00 21: 00 22: 100 23:100 24: 00 25: 50 26: 50 27: 50			b. Personal reading /research c. Programing languages			7: 5 8: 5 9: 5 10: 5 11: 3 12: 3 13: 4			7: 0 8: 0 9: 3 10: 5		7: 8: 9: 10 11 12 13 14		
3	M	Hardware/Software Engineer	Third Level (Degree)	1:100 2: 115 3: 100 4:110 5: 100 6: 100 7:100 8: 115 9: 100 10:110 11: 100 12: 100 13: 100 14: 100 15: 100 16: 100 17: 100 18: 100	10. Telecomes: 200 16. Project management: 150	No	a. On the job training b. Attend training courses c.	4 to 6 months	By funding external courses	1: 4 2: 5 3:5 4: 5 5: 5 6: 4 7: 5 8: 3 9: 0 10: 5 11: 4 12: 5 13: 2	1: 10 2:10 3: 10 4: 5 5: 160	1: 90 2: 50 3: 70 4: 70	1: 2 2: 4 3: 5 4: 4 5: 4 6: 2 7: 0 8: 3 9: 3 10: 4	Not sure	1: A 2: D 3: A 4: A 5: D 6: D 7: D 8: A 9: D 10: A 11: D 12: A 13: SD 14: D	1.2.5 yrs 2. 4 yrs 3. Don't have one	41-45

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				19: 100 20: 100 21: 100 22: 100 23:100 24: 100 25: 100 26: 100 27: 100													
4	F	Project Manager	Third Level (Degree)	1:-100 2: -100 3: -100 4:100 5: -100 6: -100 7:100 8: 100 9: 100 10:-100 11 -100 12:-100 13 -100 14:-100 15:-100 16:-100 17:-100 18 -100 19:-100 20: 100 21:-100 22:-		No	a. On the job training b. Retrain c. Re-train, mentoring, support groups	Never received traiin g	Through mentoring my fellow staff	1:1 2: 5 3:4 4: 5 5: 4 6: 2 7: 4 8: 4 9: 0 10: 5 11: 0 12: 3 13: 3	1: 80 2:30 3: 30 4: 40 5: 160	1: 50 2: 55 3: 50 4: 50	1: 5 2: 4 3: 4 4: 0 5: 3 6: 5 7: 5 8: 4 9: 3 10: 5		1: D 2: A 3: SD 4: A 5: U 6: A 7: D 8: D 9: D 10: D 11: A 12: A 13: A 14: A	1. 6 2. 1 3. DON'T KNOW	36-40

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. I4 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				100 23:- 100 24 -100 25 -100 26:- 100 27: 100													
5	M	Customer Support/ Documentation	Third Level (Dip)	1:75 2: 75 3: 00 4:125 5: 75 6: 50 7: 100 8: 100 9: 100 10: 100 11: 00 12: 00 13 00 14: 75 15: 00 16: 00 17: 00 18 100 19: 75 20: 50 21: 100 22: 75 23: 75 24: 100 25 00 26:75 27: 50		No	a. On the job training b. On the job training c.	1 to 3 months	On the job training	1:4 2: 5 3:3 4: 3 5: 2 6: 4 7: 4 8: 2 9: 3 10: 3 11: 3 12: 4 13: 2	1: 15 2: 50 3: 15 4: 15 5: 160	1:60 2: 55 3: 60 4: 50	1: 3 2: 4 3: 3 4: 0 5: 5 6: 0 7: 5 8: 5 9: 2 10: 4	Don't know	1: A 2: D 3: A 4: U 5: A 6: U 7: U 8: A 9: U 10: D 11: A 12: A 13: A 14 SA	1. 7 2. 1 3. 5	36-40
6	M	Hardware/Software Enginee	Third Level (Degree)	1:175 2: 160 3: 110 4:185		No	a. On the job training b.Perso	13 to 15 months	Through *mentoring* by	1:3 2: 5 3:5 4: 5	1: 40 2: 20 3: 40 4: 20	1:60 2: 40 3: 40 4: 60	1: 0 2: 5 3: 3 4: 3		1: SA 2: SD 3: A 4: A	a. 5.5 yrs b. 1 yr c. 3 yrs	46-50

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
		r		5: 160 6: 160 7: 175 8: 175 9: 175 10: 150 11: 170 12: 125 13: 100 14: 125 15: 160 16: 160 17: 100 18 125 19: 160 20: 175 21: 150 22: 160 23: 140 24: 110 25 150 26: 100 27: 100			nal Training c. Data retrieval/Manipulation		fellow staff'	5: 4 6: 3 7: 5 8: 5 9: 3 10: 5 11: 3 12: 4 13: 3,	5: 240.		5: 5 6: 5 7: 3 8: 5 9: 0 10: 5		5: U 6: U 7: U 8: SA 9: D 10: D 11: D 12: D 13: D 14: D		
7	M	Customer support/ documentation	Third level (Degree)	1:50 2: 30 3: 10 4:60 5: 30 6: 10 7: 100 8: 120 9: 120 10: 160 11: 10 12: 10 13: 10 14: 70 15: 5 16: 40	10. Telecoms: 100 11.Distributed Systems : 100	No	a. On the job training b. In-house courses c. Distributed systems, 00 design/ languages, Comms technol	1 to 3 months	By funding external courses	1:3 2: 4 3:5 4: 4 5: 3 6: 2 7: 4 8: 5 9: 0 10: 5 11: 0 12: 2 13: 3	1: 50 2: 15 3: 50 4: 10 5: 100	1:90 2: 30 3: 30 4: 70	1: 0 2: 4 3: 3 4; 2 5: 3 6: 2 7: 2 8: 2 9: 3 10: 4	Union	1: D 2: A 3: A 4: U 5: A 6: U 7: SD 8: U 9: A 10: D 11: A 12: A 13:SA 14: A	a. 8 yrs b. 4 yrs c. 5 yrs	< 30

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				17: 10 18 120 19: 60 20: 10 21: 40 22: 10 23: 10 24: 10 25 10 26: 10 27: 10			ogy										
8	M	Project Manager	Post Graduate	1:40 2: 120 3: 0 4:150 5: 120 6: 80 7: 160 8: 110 9: 20 10: 160 11: 50 12: 20 13: 20 14: 110 15: 0 16: 90 17: 0 18 110 19: 140 20: 110 21: 120 22: 110 23: 110 24: 90 25: 0 26: 20 27: 0		No	a. Personal reading /research b. Training c. Management informations systems	13 to 15 months	By funding external courses	1:4 2: 5 3:3 4: 4 5: 3 6: 5 7: 3 8: 3 9: 3 10: 5 11: 4 12: 5 13: 3	1: 50 2: 110 3: 10 4: 0 5: 160	1:80 2: 85 3: 85 4: 70	1:4 2: 5 3: 4 4: 3 5: 4 6: 4 7: 0 8: 5 9: 3 10: 4		1: D 2: A 3: A 4: A 5: A 6: D 7: D 8: D 9: D 10: A 11: A 12: A 13:D 14: A	a. 2.5yrs b. 3.75 yrs c. 4 yrs	41-45
9	F	Hardwar	Third	1:80		No	a. On	4 to	Throug	1:4	1: 200	1:40	1:3	Trade	1: A	a. 9 yrs	46-50

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. l4 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
		e/Software Engineer	Level (Degree)	2: 80 3: 0 4:120 5: 0 6: 80 7: 100 8: 110 9: 120 10: 110 11: 100 12: 0 13: 0 14: 0 15: 30 16: 50 17: 90 18 : 90 19: 90 20: 0 21: 0 22: 0 23: 80 24: 0 25: 0 26: 0 27: 70			the job training b. Training courses $ on the job training c. Networks.	6 months	h mentoring by fellow staff	2: 5 3:3 4: 3 5: 3 6: 3 7: 3 8: 3 9: 3 10: 2 11: 3 12: 4 13: 2	2: 50. 3: 10 4: 0 5: 180	2: 30 3: 40 4: 20	2: 5 3: 5 4: 3 5: 4 6: 4 7: 3 8: 2 9: 3 10: 4	union. I am not a member. No representation if problem at work	2: D 3: SA 4: D 5: A 6: U 7: U 8: A 9: D 10: D 11: D 12: U 13: U 14: U	b. 6.5 yrs c. 5 yrs	
10	F	Hardware/Software Engineer	Post Graduate	1:50 2: 200 3: 140 4:120 5: 120 6: 50 7: 80 8: 50 9: 50 10: 200 11: 200 12: 50 13: 50	6. Intelligent Networks: 180 12. Transmission Systems : 150 7. Mobile Network	No	a. On the job training b. On the job training c. Data networks	1 to 3 months	By providing on the job training	1:4 2: 5 3:5 4: 5 5: 4 6: 4 7: 4 8: 5 9: 4 10: 5 11: 4 12: 4 13: 4	1:6 2: 40 3: 16 4: 0 5: 37.5X4+loads (160)	1:50 2: 60 3: 50 4: 70	1:4 2: 5 3: 4 4: 3 5: 4 6: 5 7: 5 8: 5 9: 4 10: 5	I don't know	1: SA 2: D 3: D 4: SA 5: SA 6: A 7: A 8: SA 9: D 10: D 11: A 12: A 13: U	a. 4.5 yrs b. 2 yrs c. 4 yrs	41-45

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				14: 50 15: 50 16: 50 17: 50 18: 150 19: 120 20: 140 21: 150 22: 50 23: 90 24: 50 25: 120 26: 50 27: 50	s: 200 8. Fixed networks 180										14: A		
11	M	Programmer/Developer	Third Level (Degree)	1:100 2: 50 3: 50 4:100 5: 120 6: 100 7: 150 8: 150 9: 150 10: 200 11: 120 12: 80 13: 80 14: 90 15: 80 16: 80 17: 50 18: 120 19: 150 20: 150 21: 150 22: 100 23: 100 24: 80 25: 70		Yes	a. Personal reading /research b. Training and research c. technical areas directly related to my job: Data networks	1 to 3 months	By funding courses	1:4 2: 4 3:5 4: 5 5: 4 6: 3 7: 4 8: 5 9: 4 10: 5 11: 4 12: 5 13: 4	1:48 2: 32 3: 30 4: 40 5: 160	1:50 2: 60 3: 50 4: 70	1:4 2: * 3: * 4: * 5: * 6: * 7: * 8: * 9: 4 10: *	Myself or my solicitor	1: D 2: A 3: A 4: D 5: A 6: A 7: A 8: U 9: U 10: U 11: A 12: A 13: A 14: A		46 – 50

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				26: 70 27: 70													
12	M	Hardware/Software Engineer	Thirs Level (Cert)	1:150 2: 100 3: 75 4: 200 5: 300 6: 7: 75 8: 75 9: 200 10: 200 11: 300 12: 125 13: 14: 100 15: 100 16: 125 17: 18: 150 19: 200 20: 125 21: 150 22: 100 23: 100 24: 125 25: 26: 27: 25		Yes	a. Personal reading /research b. Self-taught c. Acquiring new software skill to keep pace with demand, alternatively change career	10 to 12 months		1:4 2: 4 3:2.5 4: 3.5 5: 3 6: 3.5 7: 2.5 8: 2 9: 3.5 10: 4 11: 3 12: 4 13: 2.5	1:50 2: 90 3: 15 4: 0 5: 140		1: 2:4* 3: 1 4: 1 5: 2.5 6: 1 7: 1 8: 3 9: 1 10: 4	No-one	1: A 2: A 3: U 4: U 5: U 6: D 7: A 8: A 9: D 10: A 11: D 12: U 13: D 14 SD		41-45
13	M	Project Manager	Post graduate	1:200 2: 200 3: 60 4: 200 5: 60 6: 7: 200 8: 200 9: 200 10: 200	17. Messaging: 200	Yes	a. Personal reading /research b. Personal reading	4 to 6 months	By funding external courses	1:5 2: 5 3:2 4: 3 5: 1 6: 3 7: 1 8: 5 9: 5 10: 5	1:5 2: 10 3: 0 4: 10 5: 200	1: 50 2: 100 3: 25 4: 50	1:3 2:4 3: 3 4: 3 5: 3 6: 0 7: 3 8: 3 9: 0 10: 2	Self	1: SA 2: U 3: D 4: SA 5: A 6: SA 7: U 8: A 9: U 10: A	a. 7 yrs b. 4 yrs c. 5 yrs	46-50

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				11: 100 12: 100 13: 14: 200 15: 50 16: 17: 18: 200 19: 33 20: 21: 200 22: 23: 200 24: 100 25: 26: 27:			/research c. Operating systems, algorithms and data structures, database & information retrieval, programming languages			11: 5 12: 5 13: 1					11: U 12: A 13: U 14 :U		
14	M	Developer/Programmer	Third Level (Degree)	1:400 2: 300 3: 50 4: 500 5: 200 6: 50 7: 400 8: 400 9: 400 10: 300 11: 100 12: 50 13: 50 14: 100 15: 100 16: 100 17: 50	2. Strategic analysis of emerging technologies: 400	No	a. Personal reading /research b Personal reading /research c. New technologies, architecture	22 to 24 months	Through mentoring by fellow staff	1:5 2: 5 3:4 4: 5 5: 3 6: 3 7: 4 8: 5 9:5 10: 4 11: 3 12: 4 13: 3	1:30 2: 150 3: 30 4: 30 5: 160	1: 25 2: 100 3: 90 4: 60	1:0 2:3 3: 3 4: 0 5: 5 6: 3 7: 3 8: 3 9: 3 10: 5	My superior	1: D 2: A 3: SA 4: D 5: A 6: A 7: U 8: D 9: A 10: D 11: A 12 SA 13:SA 14 SA	a. 2 yrs b. 5 yrs c. as long as it lasts	36-40

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				18: 200 19: 200 20: 200 21: 50 22: 50 23: 50 24: 50 25: 50 26: 50 27: 50													
15	M	Project manager	Third level (Degree)	1:120 2: 90 3: 70 4: 100 5: 200 6: 100 7: 150 8:180 9: 200 10: 200 11: 150 12: 90 13: 70 14: 90 15: 80 16: 80 17: 80 18: 300 19: 100 20: 90 21: 180 22: 80 23: 100 24: 70 25: 60 26: 90 27: 80		No	a. On the job training b. On the job training, background reading c. 3G Telecom technologies	1 to 3 months	By fundung external courses	1:4 2:5 3:4 4: 3 5: 3 6: 2 7: 4 8: 3 9:3 10: 5 11: 4 12: 4 13: 3	1:70 2: 100 3: 40 4: 25 5: 200	1: 40 2: 80 3: 90 4: 70	1:3 2:4 3: 4 4: 2 5: 4 6: 3 7: 4 8: 5 9: 3 10: 4	My manager, HR or myself	1: A 2: U 3: A 4: U 5: A 6: D 7: U 8: A 9: A 10: U 11 SA 12: A 13 SA 14 U	a.10 yrs b. c. 2 yrs	46-50
16	M	Hardware/Softwa	Third Level	1:200 2: 200	14 ; Java,	No	a. Person	22 to 24	Through	1: 2:5	1:15 2: 80	1: 30 2: 40	1:0 2:0		1: D 2: A	a.8 months	36-40

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
		re Engineer	(cert)	3: 0 4: 200 5: 150 6: 150 7: 200 8:300 9: 200 10: 200 11: 150 12: 0 13: 0 14: 0 15: 100 16: 0 17: 0 18: 0 19: 150 20: 150 21: 200 22: 200 23: 0 24: 0 25: 0 26: 0 27: 0	ejb, Delphi, xml, linux		al reading /research b Net c. Web services	months	mentoring by fellow staff	3:5 4: 3 5: 2 6: 5 7: 3 8: 2 9:4 10: 4 11: 0 12: 2 13: 3	3: 15 4: 10 5: 160	3: 50 4: 30	3: 0 4: 0 5: 2 6: 0 7: 0 8: 2 9: 0 10: 2		3: A 4: D 5: SD 6: U 7: D 8: D 9: U 10: D 11 U 12: A 13 D 14 SD	b. 2 years c. depends	
17	M	Customer Support/ Documentation	Cert	1:0 2: 50 3: 2 4: 0 5: 50 6: 0 7: 80 8:20 9: 30 10: 20 11: 50 12: 1 13: 0 14: 0		No	a. Personal reading /research b Net c.	22 to 24 months	By providing on the job training	1:1 2:5 3:5 4: 5 5: 3 6: 0 7: 5 8: 1 9:2 10: 4 11: 0 12: 2 13: 0	1:40 2: 30 3: 30 4: 0 5: 160	1: 20 2: 5 3: 5 4: 5	1:0 2:0 3: 0 4: 0 5: 2 6: 0 7: 0 8: 2 9: 0 10: 2	Self	1: SD 2: SA 3: U 4: A 5: D 6: U 7: U 8: A 9: 10: SD 11 A 12: A 13 SA 14 U	a.6 months b. 6 months c.	36-40

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month) .	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				15: 0 16: 30 17: 5 18: 60 19: 15 20: 10 21: 0 22: 0 23: 2 24: 5 25: 0 26: 0 27: 1													
[illegible]	M	Customer Support/ Documentatio	Secondary/ High Schol	1:5 2: 5 3: 0 4: 3 5: 5 6: 0 7: 5 8:2 9: 10 10: 10 11: 10 12: 5 13: 2 14: 2 15: 10 16: 10 17: 3 18: 5 19: 5 20: 2 21: 10 22: 5 23: 5 24: 3 25: 5 26: 2		No	a. On the job training b. c.	1 to 3 months	By providing on the job training	1:4 2:2 3. 2 4:3 5:2 6: 3 7: 2 8: 3 9:1 10: 1 11: 2 12: 3 13: 2	1:100 2: 10 3: 40 4: 3 5: 140	1: 100 2: 50 3: 75 4: 3	1:0 2:3 3: 1 4: 0 5: 0 6: 1 7: 0 8: 0 9: 2 10: .2	Self	1: A 2: D 3: A 4: A 5: A 6: D 7: A 8: A 9: D 10: A 11 D 12: D 13 U 14 D	a.40 yrs b. none c. life	31-35

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress: You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				27: 2													
19	F	Developer/Programmer	Third Level (Dip)	1:50 2: 50 3: 0 4: 50 5: 0 6: 50 7: 100 8:200 9: 50 10: 50 11: 150 12: 50 13: 0 14: 0 15: 50 16: 50 17: 50 18: 50 19: 100 20: 50 21: 150 22: 150 23: 50 24: 50 25: 50 26: 50 27: 100	18. Technical doc methods 200 19. Help system, webworks, robohelp 200	No	a. On the job training b. From instruction manuals c.	13 to 15 months	By funding external courses	1:3 2:5 3. 5 4:5 5:2 6: 5 7: 5 8: 5 9:1 10:5 11: 3 12: 5 13: 4	1:50 2: 50 3: 50 4: 50 5: 140	1: 50 2: 40 3: 50 4: 40	1:4 2:5 3: 4 4: 0 5: 5 6: 3 7: 4 8: 3 9: 4 10: 4	Self or Union (Only a few of us are members and the company does not know)	1: A 2: D 3: U 4: A 5: SD 6: SD 7: SA 8: A 9: SD 10: A 11 D 12: A 13 D 14 D	a.10 yrs b. 1.5. 3. 4	31-35
20	F	Software Engineer	Postgraduate	1:120 2: 150 3: 100 4: 150 5: 100 6: 100 7: 120 8:120 9: 120 10: 120 11: 120		No	a. On the job training b. Personal research c. Personal	Never received training	Doesn't help us acquire new skills	1:5 2:5 3. 3 4:3 5:3 6: 1 7: 2 8: 4 9:4 10:5 11: 5	1:40 2: 160 3: 40 4: 16 5: 184	1: 75 2: 90 3: 88 4: 50	1:4 2:4 3: 5 4: 3 5: 4 6: 4 7: 5 8: 5 9: 2 10: 5		1: D 2: A 3: A 4: U 5: A 6: SD 7: U 8: D 9: D 10: U 11 A	a.3 yrs b. 0 C. 4 yrs	40

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				12: 100 13: 100 14: 100 15: 100 16: 100 17: 100 18: 150 19: 100 20: 100 21: 100 22: 100 23: 100 24: 100 25: 100 26: 100 27: 100			Research			12: 5 13: 3					12: U 13 D 14 SD		
21	M	Software Developer	Degree	1:100 2: 110 3: 100 4: 150 5: 120 6: 100 7: 110 8:140 9: 180 10: 130 11: 120 12: 100 13: 100 14: 105 15: 100 16: 100 17: 100 18: 120 19: 140 20: 100 21: 110 22: 110 23: 110	3. Requirement Analysis 130%	No	a. On the job training b. Self – possible college c. Methodology & Engineering	Never received training	May purchase books	1:4 2:5 3. 3 4:4 5:3 6: 1 7: 2 8: 5 9:4 10:5 11: 3 12: 4 13: 4	1:60 2: 30 3: 10 4: 20 5: 100	1: 20 2: 10 3: 30 4: 10	1:1 2:4 3: 4 4: 1 5: 3 6: 0 7: 0 8: 0 9: 0 10: 4	Supervisor	1: A 2: SA 3: D 4: D 5: D 6: D 7: U 8: U 9: U 10: A 11 SA 12: A 13 A 14 U	a.3 yrs b. 0 C. 3 Yrs	> 40

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress: You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				24: 100 25: 100 26: 100 27: 100													
22	F	Sofrware Dévelloper	Thurd Level (Cert)	1:100 2: 100 3: 100 4: 150 5: 100 6: 100 7: 150 8:150 9: 100 10: 130 11: 150 12: 100 13: 100 14: 100 15: 100 16: 100 17: 100 18: 100 19: 100 20: 100 21: 150 22: 100 23: 100 24: 100 25: 100 26: 100 27: 100	9. Web Design 130	No	a. On the job training b. Reading c.	6 months	Mentoring	1:3 2:4 3. 3 4:4 5:3 6: 3 7: 4 8: 3 9:4 10:4 11: 2 12: 4 13: 2	1:32 2: 10 3: 8 4: 0 5: 150	1: 90 2: 70 3: 70 4: 80	1:5 2:3 3: 3 4: 4 5: 4 6: 5 7: 0 8: 0 9: 4 10: 4	Self	1: A 2: A 3: D 4: U 5: D 6: D 7: U 8: A 9: A 10: D 11 A 12: D 13 D 14 D	a.5 yrs b. 10 C. 4 Yrs	45
23	F	Devel/prog	Thurd level dip	1:00 2: 00 3: 00 4: 150 5: 00 6: 00 7: 00 8:200	1:00 2:00 3:00 4:00 5:.00 6: 00 7: 00 8:00	No	a. On the job training b. On the job training	13 to 15 months	Through mentoring by fellow staff	1:4 2:5 3. 3 4:3 5:2 6: 3 7: 3 8: 2	1:30 2: 60 3: 0 4: 0 5: 160	1: 100 2: 60 3: 40 4: 40	1:5 2:4 3: 0 4: 3 5: 5 6: 5 7: 5 8: 5	Self	1: A 2: D 3: U 4: A 5: U 6: U 7: A 8: A	a.6 yrs and < 10 b. This is my first job C. 6 yrs and < 10	36 to 40

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				9: 00 10: 00 11: 00 12: 00 13: 00 14: 00 15: 00 16: 00 17: 00 18: 00 19: 00 20: 00 21: 00 22: 00 23: 00 24: 00 25: 00 26: 00 27: 00	9: 00 10:00 11: 00 12: 00 13: 00 14: 100 15 120 16: 00 17: 120 18: 00 b.					9:2 10:5 11: 3 12: 4 13: 4			9: 3 10:5		9: D 10: A 11 U 12: A 13 A 14 U		
24	F	Hardware/Software Engineer	Post Grad	1:00 2: 00 3: 00 4:00 5: 00 6: 00 7: 00 8:00 9: 00 10: 50 11: 00 12: 00 13: 00 14: 00 15: 00 16: 00 17: 00 18: 00 19: 00 20: 00	1:80 2:80 3:70 4:00 5: 00 6: 00 7: 00 8:00 9: 10 10:100 11: 100 12: 00 13: 00 14: 10 15 30 16: 00 17: 00 18: 00 b.	No	a. Personal Reading/Research b. Personal Reading/Research	7 to 9months	Through mentoring by fellow staff	1:4 2:5 3. 3 4:3 5:3 6: 1 7: 3 8: 4 9:0 10:4 11: 4 12: 4 13: 0	1:40 2: 00 3: 10 4: 10 5: 160	1: 60 2: 60 3: 60 4: 60	1:0 2;5 3: 4 4: 2 5: 3 6: 3 7: 3 8: 3 9: 3 10:3	Union	1: A 2: U 3: A 4: A 5: A 6: U 7: A 8: U 9: A 10: A 11 A 12: A 13 A 14 A	a..4 yrs and < 5 b. This is my first job C. 4 yrs and < 5	41 to 45

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				21: 00 22: 00 23: 00 24: 00 25: 00 26: 00 27: 00													
25	M	Hardware/software Engineer	Post Grad	1:20 2: 10 3: 00 4:50 5: 100 6: 00 7: 200 8:100 9: 140 10: 00 11: 00 12: 00 13: 00 14: 00 15: 00 16: 00 17: 00 18: 00 19: 00 20: 00 21: 00 22: 00 23: 00 24: 00 25: 00 26: 00 27: 00	1:50 2:00 3:00 4:00 5: 00 6: 00 7: 00 8:50 9: 50 10:00 11: 00 12: 00 13: 50 14: 00 15 00 16: 00 17: 50 18: 50 b.	No	a. On the job training b. Night Courses	13 to 15 months	Through mentoring by fellow staff	1:4 2:5 3.4 4:5 5:4 6: 3 7: 3 8: 2 9:4 10:5 11: 4 12: 4 13: 3	1:30 2: 50 3: 5 4: 0 5: 160	1: 50 2: 50 3: 40 4: 40	1:0 2:5 3: 4 4:3 5: 0 6: 0 7: 2 8: 2 9: 2 10: 0	Don't know	1: A 2: D 3: A 4: A 5: D 6: D 7: SA 8: A 9: SD 10: A 11 D 12: D 13: D 14: D	a..3 yrs and < 4 b. < 1 C. 4 yrs and < 5	36 to 40
26	M	Hardware/software Engineer	Third Level (Dip)	1:160 2: 00 3: 00 4:170 5: 00	1:100 2:100 3:100 4:100 5: 00	No	a. On the job training b. On the job	7 to 9 months	By providing on the job training	1:3 2:5 3.3 4:3 5:3	1:20 2: 100 3: 20 4: 0 5: 200	1: 100 2: 70 3: 60 4: 70	1:0 2:5 3: 4 4:2 5: 3	Union	1: A 2: D 3: A 4: A 5: D	a..20 yrs or more b. < 1 C. 20 yrs or more	41 to 45

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				6: 00 7: 00 8:160 9: 170 10: 00 11: 00 12: 00 13: 00 14: 00 15: 00 16: 00 17: 00 18: 00 19: 00 20: 00 21: 00 22: 00 23: 00 24: 00 25: 00 26: 00 27: 00	6: 100 7: 100 8:100 9: 00 10: 100 11: 100 12: 00 13: 100 14: 00 15: 100 16: 00 17: 100 18: 00 b.		training			6: 5 7: 3 8: 4 9:5 10:5 11:3 12: 3 13: 3			6: 0 7: 0 8: 0 9: 3 10: 4		6: D 7: D 8: A 9: D 10: D 11 U 12: A 13: U 14: U		
27	M	Customer Support/ Documentation	Secondary/ High School	1:00 2: 00 3: 00 4:00 5: 00 6: 00 7: 00 8:00 9: 00 10: 00 11: 00 12: 00 13: 00 14: 00 15: 00 16: 00 17: 00	1:00 2:00 3:00 4:00 5: 00 6: 00 7: 00 8:00 9: 00 10: 00 11: 00 12: 00 13: 00 14: 00 15: 00 16: 00 17: 00	No	a. On the job training b. On the job training	7 to 9 months	By funding external courses	1:5 2:5 3.3 4:4 5:4 6: 3 7: 4 8: 5 9:4 10:4 11:4 12: 4 13: 3	1:25 2: 100 3: 25 4: 0 5: 160	1: 75 2: 50 3: 50 4: 90	1:0 2:4 3:3 4:4 5: 4 6: 1 7: 0 8: 0 9: 1 10: 3	Union	1: A 2: U 3: SA 4: A 5: A 6: A 7: A 8: A 9: U 10: U 11 A 12: U 13: A 14: A	a..20 yrs or more b. First job C. 20 yrs or more	36 to 40

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				18: 00 19: 00 20: 00 21: 00 22: 00 23: 00 24: 00 25: 00 26: 00 27: 00	18: 00 b.												
28	M	Customer Support/ Documentation	Third Level (Degree)	1:20 2: 20 3: 00 4:110 5: 30 6: 10 7: 110 8:11 9: 110 10: 120 11: 20 12: 00 13: 00 14: 100 15: 00 16: 10 17: 00 18: 140 19: 60 20: 00 21: 80 22: 20 23: 20 24: 20 25: 20 26: 20 27: 00	1:00 2:00 3:30 4:20 5: 20 6: 00 7: 100 8:100 9: 30 10: 100 11: 100 12: 100 13: 100 14: 100 15: 70 16: 100 17: 100 18: 50 b.	No	a. On the job training b. On the job training	4 to 6 months	Throught mentoring by fellow staff	1:3 2:4 3.4 4:4 5:3 6: 3 7: 4 8: 4 9:0 10:4 11:0 12: 2 13: 3	1:60 2: 60 3: 20 4: 0 5: 160	1: 90 2: 10 3: 20 4: 10	1:0 2:5 3: 4 4:0 5: 3 6: 3 7: 3 8: 3 9: 2 10:3	Union	1: A 2: U 3: D 4: D 5: U 6: U 7: SD 8: U 9: U 10: U 11 U 12: A 13: SA 14: U	a. .6 yrs and < 10 b. < 1 yr C. 4 yrs and < 5	31 to 35
29	F	Customer	Postgrad	1:130 2: 00	1:150 2:00	No	a. On the job	1 to 3	By funding	1:4 2:5	1:50 2: 150	1: 90 2: 20	1:4 2:4	Self	1: A 2: D	a. .6 yrs and < 10	36 to 40

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of *introducing* to workplace (0 -5)	Q. 14 Who would repress. *You if* work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
		Support/ Documentation		3: 00 4:120 5: 100 6: 00 7: 150 8:150 9: 150 10: 150 11: 00 12: 00 13: 00 14: 00 15: 00 16: 00 17: 00 18: 150 19: 100 20: 100 21: 00 22: 00 23: 00 24: 00 25: 150 26: 00 27: 00	3:00 4:00 5: 00 6: 00 7: 150 8:100 9: 00 10: 150 11: 00 12: 00 13: 150 14: 130 15: 00 16: 150 17: 150 18: 00 b.		training b. On the job training	months	external courses	3.4 4:5 5:4 6: 4 7: 4 8: 4 9:4 10:5 11:3 12: 5 13: 3	3: 0 4: 8 5: 150	3: 50 4: 50	3: 3 4:3 5: 4 6: 5 7: 4 8: 5 9: 4 10: 5		3: D 4: U 5: D 6: D 7: A 8: A 9: D 10: U 11 U 12: U 13: SD 14: SD	b. This is my first job C. 4 yrs and < 5	
30	F	Project Manager	Post Grad	1:00 2: 00 3: 00 4:00 5: 00 6: 00 7: 00 8:00 9: 00 10: 00 11: 00 12: 00 13: 00 14: 00	1:70 2:00 3:100 4:100 5: 00 6: 00 7: 100 8:100 9: 00 10: 100 11: 00 12: 00 13: 00 14: 00	No	a. On the job training b. On the job training	1 to 3 months	Through mentoring by fellow staff	1:4 2:5 3.5 4:5 5:5 6: 3 7: 2 8: 4 9:4 10:4 11:3 12: 5 13: 3	1:10 2: 40 3: 10 4: 10 5: 160	1:60 2: 100 3: 100 4: 80	1:5 2:3 3: 3 4:1 5: 4 6: 5 7: 5 8: 4. 9: 3 10: 5	Union	1: D 2: A 3: SA 4: D 5: A 6: D 7: D 8: A 9: A 10: A 11 A 12: A 13: A 14: A	a. .6 yrs and < 10 b. 5 yrs and < 6 C. 20 yrs or more	36 to 40

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				15: 00 16: 00 17: 00 18: 100 19: 100 20: 00 21: 160 22: 160 23: 00 24: 00 25: 00 26: 00 27: 00	15: 100 16: 00 17: 100 18: 00 b.												
3	M	Hardware/Software Engineer	Third level (degree)	1:110 2: 30 3: 30 4:150 5: 20 6: 30 7: 150 8: 150 9: 100 10: 60 11: 50 12: 00 13: 00 14: 00 15: 20 16: 40 17: 30 18: 60 19: 60 20: 30 21: 50 22: 80 23: 20 24: 10 25: 50 26: 20	1:50 2:50 3:80 4:00 5:50 6: 00 7: 120 8:80 9: 200 10: 200 11: 100 12: 00 13: 50 14: 50 15: 50 16: 100 17: 60 18: 100 b.	No	a. On the job training b. Personal Reading/Research	1 to 3 months	By funding external courses	1:3 2:5 3.5 4:5 5:3 6: 1 7: 5 8: 4 9:5 10:5 11:4 12: 4 13: 3	1:36 2: 60 3: 20 4: 5 5: 150	1:70 2: 60 3: 60 4: 30	1:5 2:4 3: 3 4:3 5: 3 6: 2 7: 3 8: 3 9: 4 10: 4	Self	1: A 2: D 3: U 4: A 5: D 6: D 7: A 8: A 9: U 10: A 11 D 12: A 13: U 14: U	a. .6 yrs and < 10 b. < 1 yr C. 4 yrs and < 5 yrs	41 to 45

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				27: 00													
32	F	Project Manager	Post Grad	1:00 2: 00 3: 00 4:150 5: 00 6: 00 7: 00 8:150 9: 120 10: 140 11: 140 12: 00 13: 00 14: 00 15: 00 16: 00 17: 00 18: 00 19: 140 20: 00 21: 00 22: 00 23: 00 24: 00 25: 00 26: 00 27: 00	1:00 2:00 3:00 4:10 5: 00 6: 00 7: 60 8:10 9: 00 10: 100 11: 00 12: 20 13: 00 14: 00 15: 100 16: 00 17: 00 18: 00 b.	No	a. On the job training b. On the job training	Never received training	Through mentoring by fellow staff	1:0 2:5 3.4 4:5 5:4 6: 2 7: 4 8: 5 9:0 10:2 11:2 12: 4 13: 2	1:20 2: 30 3: 10 4: 00 5: 160	1:40 2: 40 3: 40 4: 50	1:5 2:5 3: 4 4:2 5: 3 6: 3 7: 5 8: 4 9: 3 10: 5	Don't know	1: U 2: D 3: D 4: A 5: U 6: D 7: A 8: U 9: SD 10: A 11 A 12: A 13: A 14: D	a. .10 yrs and < 20 b. This is my first job C. 6 yrs and < 10	41 to 45
33	F	Project Manager	Third level (Nat Dip)	1:140 2: 105 3: 00 4:150 5: 160 6: 00 7: 130 8:140 9: 140 10: 110 11: 00	1:70 2:70 3:80 4:90 5: 40 6: 50 7: 00 8:00 9: 75 10: 60 11: 80	No	a. On the job training b. On the job training	1 to 3 months	Funding external courses	1:3 2:5 3.2 4:5 5:2 6: 3 7: 2 8: 2 9:3 10:3 11:3	1:32 2: 60 3: 0 4: 8 5: 148	1:60 2: 75 3: 80 4: 75	1:3 2:5 3: 4 4:3 5: 0 6: 4 7: 4 8: 4 9: 4 10: 5	Self+Boss	1: U 2: U 3: A 4: SA 5: A 6: U 7: A 8: U 9: D 10: A 11: U	a. .> 10 yrs and < 20 b. This is my first job C. < 6 yrs	37.5

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				12: 00 13: 00 14: 00 15: 50 16: 30 17: 00 18: 120 19: 120 20: 120 21: 130 22: 00 23: 120 24: 00 25: 30 26: 00 27: 00	12: 00 13: 00 14: 60 15: 95 16: 00 17: 80 18: 65 b.					12: 3 13: 3					12: D 13: D 14: D		
34	M	Project Manager	Third level (Nat Cert)	1:80 2: 50 3: 00 4:80 5: 90 6: 40 7: 20 8:50 9: 80 10: 10 11: 80 12: 00 13: 00 14: 00 15: 10 16: 00 17: 00 18: 10 19: 80 20: 70 21: 50 22: 50 23: 70	1:10 2:70 3:100 4:80 5: 00 6: 00 7: 00 8:00 9: 30 10: 20 11: 90 12: 00 13: 00 14: 00 15: 100 16: 00 17: 50 18: 50 b.	No	a. On the job training b. On the job training	1 to 3 months	Funding external courses	1:5 2:5 3.4 4:4 5:4 6: 5 7: 4 8: 3 9:0 10:5 11:4 12: 5 13: 2	1:00 2: 00 3: 00 4: 00 5: 150	1:100 2: 30 3: 10 4: 50	1:0 2:5 3: 4 4:2 5: 3 6: 0 7: 0 8: 0 9: 0 10: 3	Self	1: A 2: U 3: A 4: U 5: A 6: A 7: D 8: U 9: A 10: U 11: A 12: A 13: A 14: A	a. .< 1 yr b. 3 yrs and < 4 C. 5 yrs < 6 yrs	31-35

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				24: 10 25: 00 26: 00 27: 00													

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Appendix I

Results of Main Study of Professional and Personal Development of IT Workers in Silicon Valley, California, USA

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
1	F	Customer Support/ Dcumentation	Post Graduate	1: 20 2: 20 3: 20 4: 50 5: 20 6: 20 7: 50 8: 60 9: 20 10: 110 11: 20 12: 20 13: 00 14: 00 15: 20 16: 20 17: 20 18: 20 19: 30 20: 20 21: 120 22: 50 23: 50 24: 20 25: 00 26: 20 27: 10	13. Routing: 50	No	a. Personal reading/ research b. Research c. Routing	Never received training	Through mentoring by fellow staff	1: 4 2: 5 3: 3 4: 3 5: 2 6: 4 7: 4 8: 4 9: 2 10: 5 11: 3 12: 5 13: 2	1: 40 2: 60 3: 20 4: 5 5: 100	1: 45 2: 40 3: 40 4: 40	1: 3 2: 5 3: 2 4: 2 5: 5 6: 3 7: 3 8: 3 9: 3 10: 3	Myself	1: SA 2: SD 3: U 4: SA 5: SD 6: D 7: A 8: A 9: SD 10: D 11: D 12: A 13: U 14: U	a: 2 b: 1 c: 4	36-40
2	M	Project Manager	Post Graduate	1: 200 2: 200 3: 60 4: 200 5: 60 6: 00	17. Messaging: 200	Yes	a. Personal reading/research	4 to 6 months	By funding external courses	1: 5 2: 5 3: 2 4: 3 5: 1 6: 3	1: 5 2: 10 3: 0 4: 10 5: 200	1: 50 2: 100 3: 25 4: 50	1: 3 2: 4 3: 3 4: 3 5: 3 6: 0	Self	1: SA 2: U 3: D 4: SA 5: A 6: SA	a: 7 b: 4 c: 5	46-50

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				7: 200 8: 200 9: 200 10:200 11: 100 12: 100 13: 00 14: 200 15: 500 16: 00 17: 00 18: 200 19: 33 20: 00 21: 200 22: 00 23:200 24: 100 25: 00 26: 00 27: 00			b. Personal reading/research c. Operating systems, algorithms & data structures, database & information retrieval, programming languages			7: 1 8: 5 9: 5 10: 5 11: 5 12: 5 13: 1			7: 3 8: 3 9: 0 10: 2		7: U 8: A 9: U 10: A 11: U 12: A 13: U 14: U		
3	F	Project Manager	Third Level (Dip)	1:300 2: 00 3: 00 4:5200 5: 00 6: 00 7:300 8: 400 9: 00 10:300 11: 200	4. Financing	No	a. Night classes b. Professional courses c. Finan	7 to 9 months	By funding external courses	1: 4 2: 5 3: 3 4: 4 5: 2 6: 3 7: 3 8: 4 9: 4 10: 5 11: 3	1: 75 2:225 3: 0 4: 0 5: 0	1: 80 2: 75 3: 75 4: 75	1: 4 2: 3 3: 3 4: 1 5: 3 6: 4 7: 5 8: 4 9: 3 10: 5	Hr Manager	1: SA 2: D 3: A 4: A 5: U 6: U 7: D 8: SA 9: SD 10: U 11: A	1. 12 2. 2 3. 6.	51-55

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem ?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				12: 00 13: 00 14: 000 15: 00 16: 00 17: 00 18: 00 19: 300 20: 200 21: 500 22: 300 23:100 24: 00 25: 00 26: 00 27: 00			cial areas			12: 4 13: 1					12: A 13: SA 14: A		
4	M	Project Manager	Post Graduate	1:80 2: 00 3: 00 4:90 5: 80 6: 80 7:80 8: 80 9: 80 10:80 11: 80 12: 90 13: 00 14: 00 15: 80 16: 80 17: 00 18: 00 19: 90 20: 90 21: 80 22: 90 23: 80		Yes	a. Personal reading/research b. Personal reading/research c. New tools such as flash., etc.	22 to 24 months	Through mentoring by fellow staff	1: 3.5 2: 5 3:3.75 4: 3 5: 2 6: 3 7: 4 8: 4 9: 5 10: 4.5 11: 4 12: 4.5 13: 4	1: 40 2:120 3: 20 4: 20 5: 200	1: 50 2: 40 3: 50 4: 55	1: 4 2: 4 3: 3 4: 3 5: 4 6: 3 7: 4 8: 3 9: 2 10: 4		1: U 2: A 3: U 4: U 5: A 6: U 7: U 8: U 9: U 10: U 11: A 12: A 13: A 14: A	1. 1 2. 1 3. 4	41-45

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No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				24: 90 25: 00 26: 00 27: 00													
5	M	Customer Support/ Dcumentation	Postgraduate	1:100 2: 200 3: 50 4:200 5: 150 6: 100 7:200 8: 100 9: 150 10: 200 11: 100 12: 100 13: 50 14: 200 15: 0 16: 100 17: 0 18: 100 19: 100 20: 0 21: 200 22: 0 23: 0 24: 0 25: 0 26: 0 27: 0		No	a. Personal reading/research b. Personal reading/research	Never received training	Reading	1:.5 2: 5 3: 4 4: 4 5: 3 6: 2 7: 1 8: 4 9: 1 10: 4 11: 3 12: 5 13: 1	1: 10 2:10 3: 10 4: 10 5: 320	1: 0 2: 25 3: 25 4: 20	1:0 2: 5 3: 5 4: 0 5: 4 6: 2 7: 2 8: 2 9: 2 10: 4	Self	1: A 2: D 3: D 4: A 5: U 6: D 7: U 8: A 9: D 10: D 11: A 12: D 13: D 14: U	1. 1 2. 1 3. 2	61-65
6	M	Customer Support/ Dcumentation	Degree	1:00 2: 00 3: 00 4:00 5:00 6: 00 7:00 8: 00	5. Video editing, 100 Video compression 100	No	a. Personal reading/research b. Perso	Never received training	Through mentoring by fellow staff	1: 2 2: 5 3:5 4: 5 5: 5 6: 3 7: 4 8: 4	1: 80 2:0 3: 70 4: 10 5: 0	1: 100 2: 30 3: 50 4: 40	1:04 2: 3 3: 4 4: 0 5: 4 6: 0 7: 2 8: 4	Self	1: A 2: SD 3: A 4: U 5: D 6: D 7: SA 8: SA	1. 2 2. 1 3. 2	41-45

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7. How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0.-5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				9: 00 10:00 11: 00 12: 00 13: 00 14: 00 15: 50 16: 00 17: 00 18: 00 19: 00 20: 00 21: 00 22: 00 23: 00 24: 00 25: 00 26: 00 27: 00			nal reading/research			9: 0 10: 5 11: 1 12: 3 13: 4			9: 5 10: 3		9: U 10: A 11: D 12: U 13: A 14: U		
17	M	Customer Support/ Doc	Degree	1:00 2: 50 3: 00 4:00 5:00 6: 00 7:00 8: 00 9: 00 10:150 11: 00 12: 00 13: 00 14: 50 15: 000 16: 50 17: 00 18: 00 19: 00 20: 00		No	a. On the job training b. c.	4 to 6 months	By providing on the job training	1: 4 2: 4 3:3 4: 4 5: 5 6: 5 7: 2 8: 2 9: 0 10: 4 11: 0 12: 5 13: 0	1: 40 2:10 3: 40 4: 0 5: 150	1: 30 2: 0 3: 0 4: 0	1:1 2: 3 3: 2 4: 0 5: 5 6: 2 7: 1 8: 1 9: 5 10: 5	Attorney	1: SA 2: SD 3: SD 4: SA 5: SD 6: SD 7: SA 8: SA 9: SD 10 SA 11 SD 12:SD 13 SD 14:SD	1. 2 2. 1.5 3. 4	41-45

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				21: 00 22: 00 23: 00 24: 00 25: 00 26: 00 27: 00													
8	M	Customer Support/ Doc	Degree	1:00 2: 50 3: 00 4:30 5:00 6: 00 7:30 8: 30 9: 30 10:200 11: 00 12: 00 13: 00 14: 00 15: 00 16: 40 17: 00 18: 00 19: 30 20: 20 21: 20 22: 00 23: 00 24: 00 25: 00 26: 00 27: 00		No	a. Personal reading/research b. Courses	Never received training	Through mentoring by fellow staff	1: 5 2: 5 3:3 4: 3 5: 3 6: 4 7: 2 8: 2 9: 3 10: 4 11: 4 12: 5 13: 1	1:30 2:50 3: 10 4: 0 5: 150	1: 80 2: 40 3: 40 4: 40	1:4 2: 3 3:2 4: 0 5: 5 6: 3 7: 4 8: 4 9: 3 10: 4	Self	1: SA 2: SD 3: U 4: A 5: D 6: D 7: A 8: SA 9: D 10: SA 11:SD 12: U 13: U 14: D	1. 1 2. 1 3. 4	46-50
9	M	Customer Support/ Doc	Degree	1:00 2: 40 3: 00 4:20 5:00		Yes	a. Night Courses b.	4 to 6 months	On the job training	1: 5 2: 5 3:5 4: 5 5: 5	1: 80 2:80 3: 80 4: 10 5: 225	1: 50 2: 50 3: 75 4: 50	1:3 2: 5 3: 4 4: 3 5: 4	Self	1: SA 2: SD 3: D 4: A 5: A	1. 2 2. 1 3. 5	46-50

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem ?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				6: 00 7:30 8: 20 9: 30 10:100 11: 00 12: 00 13: 00 14: 00 15: 0 16: 20 17: 00 18: 00 19: 20 20: 20 21: 20 22: 20 23: 00 24: 00 25: 00 26: 00 27: 00			Night Courses			6: 5 7: 5 8: 5 9: 0 10: 5 11: 3 12: 5 13: 2			6: 3 7: 2 8: 2 9: 3 10: 3		6: A 7: A 8: SA 9: SD 10: SA 11: U 12: A 13: D 14: D		
10	M	Hardware/Software Engineer	Postgrad	1:120 2: 150 3: 50 4:50 5:150 6: 150 7:150 8: 150 9: 200 10:150 11: 150 12: 50 13: 20 14: 20 15: 0 16: 200 17: 00		Yes	a. On the job training b. Night courses	4 to 6 months	By providing on the job training	1:5 2: 5 3:3 4: 3 5: 2 6: 3 7: 2 8: 2 9: 1 10: 5 11: 3 12: 5 13: 2	1:40 2:0 3: 10 4: 10 5: 170	1: 100 2: 50 3: 60 4: 60	1:2 2: 3 3: 2 4: 1 5: 3 6: 2 7: 2 8: 2 9: 4 10: 4	Self	1: A 2: D 3: A 4: A 5: D 6: U 7: U 8: A 9: D 10: U 11: U 12: U 13: A 14: U	1. 3 2. 5 3. 5	46-50

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				18: 150 19: 150 20: 50 21: 00 22: 50 23: 100 24: 50 25: 50 26: 50 27: 00													
11	M	Hardware/SoftweEngineer	Degree	1:50 2: 150 3: 00 4:100 5:00 6: 00 7:120 8: 50 9: 200 10:200 11: 100 12: 20 13: 00 14: 50 15: 0 16: 150 17: 00 18: 150 19: 100 20: 00 21: 00 22: 10 23: 00 24: 00 25: 00 26: 50 27: 50		No	a. On the job training b. Personal reading/research	10 to 12 months	By providing on the job training	1: 5 2: 5 3:4 4: 4 5: 3 6: 3 7: 3 8: 3 9: 3 10: 5 11: 4 12: 5 13: 1	1: 20 2:50 3: 10 4: 0 5: 200	1: 70 2: 40 3: 40 4: 45	1:1 2: 2 3: 2 4: 1 5: 4 6: 2 7: 1 8: 1 9: 2 10: 3	Self	1: SA 2: SD 3: U 4: A 5: SD 6: U 7: A 8: A 9: D 10: A 11: D 12: U 13: U 14: A	1. 2 2. 2 3. 4	46-50
12	M	Customer	Degree	1:100 2:100	14. New	No	a. Perso	Never received	By funding	1: 5 2: 5	1: 20 2:0	1: 50 2: 50	1:1 2: 1	Self	1: A 2: D	1. 3 2. 2	46-50

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem ?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
		Support/ Doc		3: 80 4:80 5:50 6: 50 7:150 8: 150 9: 150 10: 150 11: 150 12: 00 13: 00 14: 50 15: 0 16: 50 17: 00 18: 50 19: 150 20: 20 21: 00 22: 00 23: 00 24: 00 25: 00 26: 20 27: 00	programming languages 150		nal reading/research b.	training	external courses	3:3 4: 3 5: 3 6: 5 7: 3 8: 3 9: 3 10: 5 11: 3 12: 5 13: 0	3: 20 4: 20 5: 200	3: 50 4: 50	3: 1 4: 0 5: 5 6: 0 7: 1 8: 2 9: 1 10: 4		3: A 4: A 5: A 6: A 7: D 8: A 9: A 10: D 11: A 12: A 13: A 14: A	3. 5	
13	M	Software Developer	Phd	1:130 2:120 3: 110 4:100 5:80 6: 120 7:120 8: 150 9: 150 10: 130 11: 150 12: 120 13: 130 14: 130	14. New programming languages 150	No	a. On the job training b. Reading	6 months	Mentoring	1: 5 2: 4 3:3 4: 3 5: 3 6: 3 7: 3 8: 4 9: 3 10: 4 11: 4 12: 5 13: 1	1: 50 2:0 3: 10 4: 10 5: 170	1: 75 2: 45 3: 35 4: 40	1:1 2: 2 3: 3 4: 2 5: 3 6: 2 7: 1 8: 1 9: 2 10: 3	Myself	1: A 2: D 3: D 4: A 5: D 6: D 7: A 8: A 9: SD 10: A 11 SA 12: U 13 U 14 D	a.3 yrs b. 0 C. 5 Yrs	> 50

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem ?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				15: 100 16: 160 17: 120 18: 120 19: 120 20: 120 21: 80 22: 120 23: 50 24: 140 25: 100 26: 120 27: 100													
	M	Project Manager	Post Graduate	1:100 2:120 3: 150 4:80 5:160 6: 80 7:100 8: 150 9: 100 10: 80 11: 120 12: 50 13: 120 14: 0 15: 0 16: 100 17: 0 18: 100 19: 120 20: 120 21: 0 22: 0 23: 0 24: 140 25: 120 26: 0		No	a. On the job training b. Personal reading/research	6 months	Mentoring	1: 5 2: 5 3:4 4: 3 5: 2 6: 3 7: 3 8: 3 9: 3 10: 4 11: 4 12: 5 13: 0		1: 20 2:50 3: 20 4: 0 5: 170	1:100 2: 80 3: 80 4: 80	1:5 2: 3 3: 4 4: 0 5: 3 6: 0 7: 5 8: 5 9: 0 10: 3	Manager	1: A 2: D 3: A 4: A 5: A 6: A 7: D 8: A 9: A 10: D 11 A 12: A 13 A 14 SA	a.12 yrs b. 3 C. 15 Yrs (depends on the job)	45

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				27: 0													
15	F	Customer Support/ Documentation	Third Level (Cert)	1:00 2:0 3:0 4: 120 5:0 6:0 7:0 8:0 9: 0 10: 120 11: 100 12: 0 13: 0 14: 0 15: 0 16: 0 17: 0 18: 120 19: 120 20: 0 21: 0 22: 0 23: 0 24: 0 25: 0 26: 0 27: 0		No	a. On the job training b. Reading/courses c.	6 months	By funding external courses	1: 4 2: 5 3:3 4: 3 5: 3 6: 5 7: 3 8: 1 9: 1 10: 4 11: 3 12: 4 13: 2	1: 30 2:10 3: 10 4: 0 5: 160	1: 70 2: 50 3: 50 4: 40	1:5 2: 3 3: 1 4: 0 5: 3 6: 3 7: 4 8: 4 9: 2 10: 4	Me	1: A 2: D 3: A 4: U 5: U 6: U 7: U 8: A 9: D 10: U 11 A 12: D 13 A 14 A	a.4yrs b. 1 C. 7	40
16	M	Project Manager	Post Grad	1:00 2:0 3:120 4: 0 5:140 6:0 7:0 8:120 9: 50 10: 20 11: 50	1:0 2:0 3:0 4: 0 5:100 6: 0 7:0 8:0 9: 0 10: 0 11: 0	No	On the job training b. On the job training	4 to 6	Through mentoring by fellow staff	1: 4 2: 5 3:3 4: 4 5: 2 6: 3 7: 3 8: 3 9: 3 10: 5 11: 4	1: 30 2: 50 3: 10 4: 0 5: 190	1: 100 2: 60 3: 70 4: 60	1:4 2: 1 3: 4 4: 0 5: 3 6: 0 7: 4 8: 4 9: 0 10: 4	Supervisor	1: A 2: SD 3: A 4: D 5: A 6: A 7: U 8: A 9: U 10: D 11 A	a.10 to 20 yrs b. < 3 C. 10	46-50

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				12: 0 13: 50 14: 0 15: 0 16: 0 17: 0 18: 0 19: 50 20: 0 21: 0 22: 0 23: 0 24: 0 25: 0 26: 0 27: 0	12: 0 13: 0 14: 100 15: 160 16: 0 17: 0 18: 0 b:					12: 4 13: 0					12: SA 13 SA 14 A		
17	M	Dev/prog	Degree	1:100 2:0 3:0 4: 100 5:100 6:0 7:100 8:100 9: 100 10: 100 11: 25 12: 0 13: 0 14: 0 15: 25 16: 0 17: 0 18: 0 19: 100 20: 75 21: 0 22: 50 23: 50	1:0 2:100 3:100 4: 0 5:0 6:50 7:25 8:75 9: 75 10: 0 11: 100 12: 0 13: 100 14: 80 15: 100 16: 25 17: 100 18: 75 b:	No	Personal reading/res b. Personal reading/res	1 to 3	By funding external courses	1: 4 2: 1 3:3 4: 5 5: 4 6: 1 7: 4 8: 5 9: 0 10: 4 11: 3 12: 4 13: 3	1: 26 2:4 3: 0 4: 80 5: 210	1: 100 2: 100 3: 100 4: 100	1:0 2: 3 3: 5 4: 0 5: 5 6: 0 7: 0 8: 0 9: 3 10:3	Self	1: D 2: D 3: A 4: A 5: A 6: A 7: D 8: D 9: U 10: D 11 U 12: SA 13 SA 14 A	a.3 yrs and < 4 b. 1 yr and < 2 C. > 1	56-60

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem ?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				24: 75 25: 0 26: 0 27: 0													
18	F	Project manager	Third Level (Cert)	1:125 2:0 3:0 4: 125 5:0 6:0 7:0 8:0 9: 0 10: 0 11: 0 12: 0 13: 0 14: 0 15: 0 16: 0 17: 0 18: 0 19: 150 20: 0 21: 200 22: 150 23: 150 24: 0 25: 0 26: 0 27: 0	1:0 2:100 3:100 4: 50 5:0 6: 0 7:0 8:0 9:0 10: 0 11: 0 12: 0 13: 0 14: 0 15: 100 16: 0 17: 50 18: 25 b:	No	a. On the job training b. On the job training	22 to 24	By funding external courses	1: 3.5 2: 5 3:2 4: 3.5 5: 1 6: 1 7: 2 8: 3 9: 3.5 10: 4 11: 3 12: 3 13: 1	1: 16 2:240 3: 0 4: 0 5: 120	1: 100 2: 100 3: 100 4: 100	1:2 2: 4 3: 2 4: 1 5: 3 6: 3 7: 5 8: 3 9: 1 10: 4	Human Resources	1: A 2: D 3: A 4: U 5: A 6: U 7: D 8: A 9: U 10: D 11: A 12: A 13: A 14: U	a.10 yrs and < 20 b. 1 yr and < 2 C.6 yrs and < 10	31-35
19	M	Project manager	Post Grad	1:0 2:0 3:0 4: 0 5:0 6:0 7:0 8:0	1:0 2:0 3:0 4: 0 5:0 6: 0 7:0 8:0	Yes	a. On the job training b. Night classe	Ongoing	On the job training	1: 5 2: 5 3:5 4: 5 5: 5 6: 5 7: 0 8: 5	1: 20 2:10 3: 10 4: 10 5: 220	1: 70 2: 10 3: 10 4: 10	1:3 2: 5 3: 3 4: 3 5: 4 6: 3 7: 3 8: 3	No staff representation	1: SA 2: SD 3: A 4: SA 5: D 6: D 7: D 8: A	a 3 yrs b. 1 yr C.4 yrs	60 hrs

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				9: 0 10: 150 11: 0 12: 0 13: 0 14: 0 15: 0 16: 0 17: 0 18: 150 19: 00 20: 00 21: 00 22: 00 23: 00 24: 00 25: 00 26: 00 27: 00	9:0 10: 0 11: 0 12: 0 13: 0 14: 0 15: 0 16: 0 17: 0 18: 0 b: Network Security 150		s			9: 5 10: 5 11: 5 12: 5 13: 3			9: 4 10: 4		9: U 10: A 11: D 12: D 13: U 14: U		
20	M	Customer Support/ Socumentation	Third Level (Degree)	1:0 2:0 3:0 4: 0 5:0 6:0 7:0 8:100 9:120 10: 150 11: 130 12: 0 13: 0 14: 120 15: 0 16: 0 17: 0 18: 0 19: 00 20: 00	1:0 2:0 3:0 4: 0 5:0 6: 120 7:120 8:120 9:110 10: 130 11: 0 12: 0 13: 130 14: 100 15: 120 16: 0 17: 150 18: 150	No	a. On the job training b. Personal research	None		1: 4 2: 0 3:4 4: 4 5: 4 6: 3 7: 4 8: 3 9: 0 10: 4 11: 1 12: 5 13: 0	1: 10 2:00 3: 10 4: 10 5: 200	1: 70 2: 30 3: 30 4: 40	1:1 2: 4 3: 2 4: 0 5: 5 6: 0 7: 0 8: 0 9: 0 10: 3	Self	1: A 2: D 3: D 4: A 5: D 6: D 7: A 8: A 9: D 10: A 11: SD 12: A 13: U 14: D	a < 1 yr b. 2 yrs C.3 yrs	50 hrs

National College of Ireland

No	Q. 1. Gender	Q. 2. Current Position	Q. 3. Ed. Level	Q. 4. Skills Level (%)	Q. 5. New Skill (%)	Q. 6. Member Prof Comp Org?	Q.7 How do you acquire skills?	Q. 8. Last received training?	Q. 9 How does employer help you reskill?	Q. 10 Indicate importance of aspects of life (0 -5)	Q. 11. Indicate Hours spent (per month)	Q. 12. Indicate needs met by employment (%)	Q. 13. Indicate importance of introducing to workplace (0 -5)	Q. 14 Who would repress. You if work problem?	Q. 15. Which best describes work environ	Q. 16 Time in employment	Q. 17 Hours per week at work
				21: 00 22: 00 23: 00 24: 00 25: 00 26: 00 27: 00													