THE IMPACT OF CONTEMPORARY INNOVATION MANAGEMENT TRENDS TOWARDS THE ORGANIZATION OF IT PROJECTS

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Thesis submitted in partial fulfilment of the requirements for the degree Master of Business Administration in Information Technology

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DECLARATION

I declare that this is my own work and this thesis does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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Abstract

Innovation failures when properly understood will support to improve the understanding of innovation success. When the root causes for the failures are analysed, managers can intervene to reduce the occurrences of such failures. The objective of this study is to explore the efficiency in the organizing of innovative IT projects in the Sri Lankan context.

For this qualitative research study, data was collected through open-ended questions to interview corporate informants to gather data to analyse perceptions of the participants with regard to innovation management in IT projects. MAXQDA, a software that supports the analysis of qualitative data was used to electronically store, document and structure all interview transcripts.

The ordering of aspects of innovation management that influence the organisation of IT projects was Reward Structure, Recruitment, Training and Development, Gamification and Employee Empowerment, where Reward Structure had the highest code frequency per document and number of documents per code. For different innovation management methods, the ordering of the factors which influence the organisation of IT projects is elaborated upon. In the observation of 11 organisations, it was found that there were no two identical innovation management implementations and each organisation provided a different experience.

Data sources for the interviews were limited because the preliminary review of opportunities to study innovation management in the Sri Lankan context revealed that only a selected set of organisations would be relevant to the research. Only a small fraction of the existing literature attempted to establish any relationships between the variables Trend and Project Organisation. In order to introduce or improve innovation management in an organisation, the budget, needs of the organisation, how to introduce the implementation and investment evaluations need to be considered.

Keywords Innovation Management, IT Project Organisation, Grounded Theory, Qualitative Data Analysis, MAXQDA

Dedicated to My Ever Loving Parents

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LIST OF ABBREVIATIONS

Abbreviation	Description
EAM	Enterprise Asset Management
EMEA	Europe, Middle East, and Africa
ERP	Enterprise Resource Planning
ESM	Enterprise Service Management
HR	Human Resources
IFS	Industrial and Financial Systems
ISV	Independent Software Vendor
NBQSA	National Best Quality ICT Awards
ROI	Return On Investment

1. INTRODUCTION

1.1 Chapter Overview

Organisations should continuously strive to innovate in order to develop new products or processes. This is considered as an important factor in order to survive in the IT industry. However, it is considered as challenging in the practical world.

In this introductory chapter, the importance of combining innovation and project management fields and providing results which would be beneficial for the managers in making decisions in selecting the most suitable innovation management methodology for a desired IT project is discussed. The background of innovation management techniques which includes the four generations of innovation management and the evolution of project management techniques are described in this chapter.

Famous failures of innovation together with the reasons for such failures are discussed. This research also states the research problem as a rationale behind this study, the research questions and concludes with an outline of the content of each chapter.

1.2 Background and Motivation

1.2.1 Evolution of Innovation Management Techniques

In several studies, invention is defined as promising ideas for a product and innovation as a commercialized product (Ahn et al., 2010; Branscomb & Auerswald, 2002; Chandy et al., 2006; Damanpour & Aravind, 2012; Inauen & Schenker-Wicki, 2012; Kalogeras & Anagnostopoulos, 2012; Knight et al., 2005; Şimşit et al., 2014; Wonglimpiyarat, 2012). In the study carried out by Chandy et al. (2006), the following characteristics of firms with the highest conversion ability from invention to innovation were identified.

- Concentrated on a reasonable number of ideas, where they gave priority to important areas as well as areas where they had proficiency.
- Took a reasonable amount of time to consider promising ideas.

Ejermo and Kander (2006) found that inventions were not always transformed into innovations. This was due to the lack of demand or risk taking. Whereas in the study by Knight et al. (2005), it was identified that it was not a deficiency in inventions but it was the deficiencies in the managerial process taking inventions to the market and the lack of a business model. For example, Interval Research which was established in 1990 by Microsoft co-founder Paul Allen was closed in 2000. The reasons for this closure were as follows:

- Inability to market their technology.
- Lack of a business model.

Kalogeras and Anagnostopoulos (2012) identified in their study that there is a delay in time between an invention and an innovation due to the following factors:

- Lack of technology to transform an idea to a product.
- Lack of market demand for a product during a certain period.

They found the following alternatives to commercialize an invention.

- Sell invention to a third party.
- Licensing.
- Creating a partnership.
- Setting up a start-up company.

There are various ways in which innovation is defined. This is because different groups have different perceptions about innovation. However, different ways of defining it is useful for different situations and different purposes. Deschamps (2005) categorizes different forms of innovation as follows:

- New product category
- New business model

- Improved customer solution
- Improved product, process or service offering

Steve Jobs, the co-founder and chief executive of Apple Computer, defined innovation as

> “Innovation has nothing to do with how many R & D dollars you have. When Apple came up with the Mac, IBM was spending at least 100 times more on R & D. It is not about money. It's about the people you have, how you're led, and how much you get it” (Herlin & Gerges, 2009).

Co-founder of Microsoft, Bill Gates’ view on innovation is

> “I believe in innovation and that the way you get innovation is you fund research and you learn the basic facts” (Pratihar, 2014).

Facebook’s motto “Move fast and break things” encourages employees to make decisions and act (Spreitzer & Porath, 2012).

Jeff Bezos, founder and CEO, Amazon states that

> “Every new thing creates two new questions and two new opportunities” (Jacobovitz, 2015).

According to Warren Bennis, the American scholar and pioneer of the contemporary field of Leadership studies, innovation is defined as

> "Innovation— any new idea—by definition will not be accepted at first. It takes repeated attempts, endless demonstrations, monotonous rehearsals before innovation can be accepted and internalized by an organization. This requires courageous patience" (Stavridis, 2010).

Father of Software quality, Watts Humphrey who authored Managing Technical People - Innovation, Teamwork and Software Process, defined it as

> "Innovation is the process of turning ideas into manufacturable and marketable form" (Humphrey, 1997).

Based on the above definitions, innovation can be defined as transforming ideas to produce new or improved strategies, capabilities, products, services, or processes.

Innovation management is managing and controlling innovation processes. Ortt and Duin (2008) looked into the historical overview of innovation management after WOII as innovation was considered as crucial for the economic and technological survival of nations leading to a scientific research in innovation management.

Niosi (1999) describes four generations of innovation management as follows:

- First generation - brought the corporate R&D laboratory.
- Second generation - adapted project management methods to R&D.
- Third generation - brought internal cooperation between diverse functions in the organization.
- Fourth generation - adds procedures to conduct the R&D function by combining the knowledge of users and competitors.

1.2.2 Evolution of Project management techniques

The evolution of project management can be categorized into three sections as follows:

1. Traditional Project Management (1960 - 1985) - used on large projects with vast amount of resources with an ultimate profit goal.
2. Renaissance Period (1985 - 1993) – applied to even small projects and it could improve profitability. The importance of project management was identified by all functional areas of a business.
3. Modern Project Management (1993 - 1996) – organizations found out that both quantitative and behavioural area of project management were changing remarkably and that it was important to distinguish between traditional and

modern project management practices and wanted their stakeholders to know these developments.

1.3 Research Problem and Topic

There are many famous failures due to innovation management.

- Example 1: The Newton of Apple (1993)

  Apple Newton MessagePad, a tablet computer was meant to be a revolutionary innovative product. Sculley, the CEO at that time rushed the Newton to market as rivals Compaq and Sony were also working on their PDA versions. This resulted in the production of an incomplete product that did not achieve the expectations of the customers.

- Example 2: Sony Betamax (1979)

  An alternative for JVC's VHS format was Betamax. It beat VHS to market in US and Japan but resulted in technology failure due to implementation issues. VHS machines were not costly when compared to Betamax as there was a diverse set of VHS machines.

Innovation failures when properly understood will support to improve the understanding of innovation success. When the root causes for the failures are analysed, managers can intervene to reduce the occurrences of such failures. Some of the reasons for innovation efforts to fail have been identified as follows:

- Inadequate customer focus or even innovation rejected by customers.
- Employees not engaged in strategy.
- A disempowering culture of blame, with ineffectual communication prevalent and tolerated.
- Ineffective teamwork, communication and collaboration.
- Suppliers not engaged or fail to deliver on requirements.

("The One Word Answer to Why Innovation Fails," n.d.)

By lessons learned from the past, it is important to know how to select the best innovation management technique for an IT project.

While tech giants such as Google, Apple and Microsoft benefit from the studies conducted on their innovation management strategies, very little literature has targeted how innovation management influences to organize IT projects successfully.

Therefore, the aforementioned gap in the literature indicate that a study needs to be carried out on the topic impact of innovation management trends towards the organisation of IT projects in Sri Lanka. This study seeks to complement existing literature by ensuring that a new dimension of innovative IT project organizing from a Sri Lankan context is added.

1.4 Research Objective

The objective of this study is to explore the efficiency in the organizing of innovative IT projects in the Sri Lankan context. By using a bottom up approach, this study provides indications that innovation management, in the Sri Lankan context, is or is not fostered.

1.5 Research Questions

1. What aspects of innovation management influences the organisation of IT projects?

2. For different innovation management methods what is the ordering of the factors which influence the organisation of IT projects?

1.6 Research Scope

The scope of the thesis is to identify and research on the trends involved in managing innovation in the IT organisations and provide comprehensive guidelines to facilitate managers to make decisions when organising innovative IT projects. This research was targeted towards a selected set of organisations. This is because the preliminary review of opportunities to study innovation management in the Sri Lankan context revealed that only a selected set of organisations would be relevant to the research and a deeper study of management trends at each of these organisations to be necessary. The results produced as the output of this research would be beneficial for

the managers of IT projects in their decision making and planning. They can make use of these results to select the most suitable innovation management methodology for a desired IT project.

1.7 Chapter Summary

The thesis consists of five chapters and is ordered in a sequence order. Following this chapter which describes the background to the thesis and the research questions, chapter 2 provides a critique of the existing literature and shows how it contributes to the research. Chapter 3 describes the research methodology used for this research. Chapter 4 presents the findings of this study followed by chapter 5 which offers conclusions and possible avenues for future research.

2. LITERATURE REVIEW

2.1 Chapter Overview

In past research work, innovation management and its impact in several areas is studied. However, this type of research is lacking how it impacts to organise IT projects. In order to begin exploring the role of innovation management towards organising IT projects, it is important to investigate literature that supports to understand it. The two bodies of literature that will be explored include: innovation management trends and organising IT projects.

The objective of this literature review is to acquire a clear understanding of the current research in the field of innovation and project management, and to identify and analyse previous work carried out on innovation management in IT projects in order to select the most suitable innovation management techniques for different IT projects.

This chapter is divided into two sections. They are:

1. Innovation Management
2. Innovation Management and Project Management

This review of the literature focuses on the information presented in journals and conference proceedings, in the hope that these findings are based more on sound research and systematic analysis of the issues.

2.2 Innovation Management

Innovation management is the use of management tools, techniques, processes and managerial skills to enhance innovation in an efficient and effective manner. A vast body of knowledge exists regarding innovation management.

Some studies have identified organizational characteristics for continuous innovation. For example, Steiber and Alänge's (2013) study has focused on the capabilities required in order to remain competitive in a constantly improving and changing industry.

2.2.1 Innovation Models

There have been many innovation models to support the innovation process in organisations. Hobday's (2005) study states the following innovation models:

- 1st Generation

  The 1st generation used the technology push model, which was a linear model where innovation was considered as a sequential process in different stages.

- 2nd Generation

  Demand pull models were used in the 2nd generation where it was a linear model and was focused on getting ideas from the marketplace, market research and directing R&D investments towards meeting customer needs.

- 3rd Generation

  The coupling or interactive models were used. It identifies the influence of technological capabilities and market needs add how the organisation can support it. It contains feedback loops and it is also a sequential model with limited functional integration.

- 4th Generation

  The 4th generation used integrated models, where it was a combination of push and pull models and emphasizes on external linkages.

- 5th Generation

  Integration and networking models were used in the 5th generation, where it supports innovation as a distributed networking process based on corporate coalitions, partnerships and government funding. This leads to an increase in the strategic coalitions with suppliers and customers. These models are closed networks of innovation, where an organisation produces, improves and commercializes its own idea.

- 6th Generation

  Open innovations were used in the 6th generation, where an organisation

commercializes both its own ideas as well as innovative ideas from other organisations.

Table 2.1 illustrates the development of innovation models according to an innovation timeline.

Table 2.1: Development of Innovation Models

Model	Generation	Characteristic
Technology Push	First (1950-1960)	Emphasis on R&D and Science. Market receives the results of the R&D.
Market Pull	Second (1960-1970)	Emphasis on Marketing. Market is the source of new ideas for R&D.
Coupling Model	Third (1970-1980)	Feedback loops between R&D and Marketing.
Interactive Model	Fourth (1980-1990)	Combinations of push and pull models, integration within firm, emphasis on external linkages.
Network Model	Fifth (1990-2000)	Emphasis on knowledge accumulation and external linkages, system integration and extensive networking.
Open Innovation	Sixth (2000-)	Internal and external ideas as well as internal and external paths to market can be combined to advance the development of new technologies.

Source : (Hobday, 2005)

2.2.2 Innovation Life Cycle Model

Wonglimpiyarat (2012) used the innovation life cycle model in order to investigate the technology change process of Apple and Microsoft. Table 2.2 illustrates the innovation strategies of Apple and Microsoft based on against a set of criteria.

Table 2.2: Innovation strategies of Apple and Microsoft

Company	Apple	Microsoft
Event	Launch of Macintosh by Apple.	Launch of Microsoft Windows.
Goal	Achieve proprietary benefits by assuming the industry standard would be Macintosh technology.	Be the de facto standard.
Strategy	MacOS was not licensed to Original Equipment Manufacturer (OEM) hardware suppliers.	Low-cost licensing strategy to license through OEM with PC manufacturers. Product bundling strategy.

Weakness	Overlooked competitors' distribution capabilities to market innovations.	
Outcome	Microsoft Windows had features similar to MacOS leading to reduced differentiation, ability to compete and possibility to create a business platform.	Increased value and demand for Microsoft Windows lead to wide acceptance and de facto standard.

Source : (Wonglimpiyarat, 2012)

2.2.3 Challenges

In the qualitative study by Drews et al. (2013), they identified the following problems when implementing IT innovation management:

- Different understanding of what an IT innovation is
- Heterogeneous situation regarding the culture of innovation
- Unclear role definitions for performing IT innovation management
- IT innovation management processes: missing overview on needed processes
- IT innovation management processes: structure vs. flexibility
- IT innovation budget: responsibility and amount
- Methods of innovation management are not known or not used
- Lack of integration with other tasks and processes
- Missing IT innovation strategy
- Need to professionalize IT innovation management
- Missing integration of IT innovation management with general innovation management

2.2.4 Innovation Success

The study by Birchall and Armstrong (2003) on 240 businesses in 7 European countries explores factors reported in literature as being important for success in innovation and identifies relationships that strengthen an organisation's ability to achieve successful innovative outcomes.

They identified the following Innovation Critical Success Factors:

- Empowering culture
- Team focus
- Technology responsiveness
- Outward looking
- Innovation process management
- Technology followers
- Externally influenced innovation

Also, business performance, stakeholder satisfaction, patients awarded, continuous improvement were considered as Multiple Innovation Success Criteria. The study describes the relationships between Innovation Critical Success Factors and multiple Innovation Success Criteria.

The innovation success factors are divided into four segments.

1. External environment
   It consist of factors that impact the organisation’s ability to engage in an innovation, e.g. economic environment and industry sector of the organisation.

2. Internal environment
   It consist of factors over which the organisation have managerial control, e.g. innovation and corporate strategy, core and peripheral technology, team composition and reward systems.

3. Innovation process

   It consist of factors that are related to the administration of the innovation process, e.g. management style used to support the innovation process and project staff behaviour.

4. Managing developments

   It consist of factors that are related to managing within and between the tacit boundaries with regard to the three primary factors, e.g. organisation's learning capacity and intellectual capital.

Table 2.3 illustrates the summary of the innovation success factors classified according to four focus areas.

Table 2.3: Innovation Success Factors

External Environment *Business External Focus* • Competition • Customer pressure • Acquiring technology • The market • Industry sector	**Internal Environment** *Organisational Internal Focus* • Business strategy • Staff involvement • Internal technology • Support for innovation • Climate for innovation.
Innovation Process *Process Focused* • Internal awareness • Information search • Innovation strategy • Implementation process • Prototyping	**Managing Developments** *People Focused* • Cross functional integration • Dynamics • Decision making • Systematic management • The learning process

Source : (Birchall & Armstrong, 2003)

They found that external environment, internal environment, innovation process and managing developments influence innovation success.

Inauen and Schenker-Wicki's (2012) study included survey data from 141 R&D managers. They identified three drivers of innovation, which are essential for the success of organizations. They are:

1. Global availability of knowledge
2. Technology fusion
3. Shorter innovation cycles

The dependent variables process innovations, product innovations, share of sales of new products, incremental innovations and radical innovations were used to measure a firm's innovation performance. The independent variable in this study was open innovation strategies while the control variable was firm size.

Steiber and Alänge (2013) discussed in their study of Google that an organisation does not need to be successful in all new product launches as that could indicate that continuous success shows that the organisation is risk averting and less innovative. Whereas Aschhoff and Sofka (2009) state that the success of a new product depends on the market acceptance.

In order to accomplish success in innovation management, it is important to learn from poorly managed innovations. In the study by Şimşit et al. (2014), poor management is divided into five classes. They are:

1. Top management – badly defined innovation strategies and areas being overlooked and not funded will lead to a non-committed management, where managers would be reluctant to make any decisions with regard to innovations.
2. Organizational – employees feel that the organisation is not interested in their ideas.
3. Financial – when CEO's focus on short term results and not prioritize the innovation investments properly, this could result in major financial losses.
4. Adaptation

5. Implementation issues

Şimşit et al. (2014) states that use of traditional management practices which lead to success with sustaining technologies always ended up devastating with disruptive technologies.

2.2.5 Innovation Management Trends

Several studies involving trends in innovation management were examined. Based on that, five trends in this area were identified.

2.2.5.1 Cultural

Several studies have focused on organisation's innovation culture and climate (Ahmed, 1998; Choi et al., 2013; Duygulu et al., 2015; Drews et al., 2013; Martins & Terblanche, 2003; Schneider et al., 1996; Sharifirad & Ataei, 2012). Organisational culture is defined as the values and beliefs shared by organisational members (Martins & Terblanche, 2003).

Ahmed (1998) identified norms that promote innovation. They are:

- Challenge and belief in action
- Freedom and risk-taking
- Dynamism and future orientation
- External orientation
- Trusts and openness
- Debates
- Cross-functional interaction and freedom
- Myths and stories
- Leadership commitment and involvement
- Awards and rewards

- Innovation time and training
- Corporate identification and unity
- Organisational structure: autonomy and flexibility

From the empirical study carried out by Steiber and Alänge (2013), it was found that the following organizational elements had an impact on Google's innovativeness.

- Innovation oriented culture
- Selection of individuals
- Leaders as facilitators
- Internal infrastructure
- Organization
- Performance and incentive system
- Organizational learning
- External interaction

Drews et al. (2013) found out from the 14 semi-structured expert interviews carried out that IT innovation should not be limited to the management level but by establishing a culture of innovation would lead to a successful IT innovation management. Similar work in their view is presented in several studies (Ahmed, 1998; Martins & Terblanche, 2003; Schneider et al., 1996; Steiber & Alänge, 2013).

The study also identified the following IT innovation related challenges faced by organizations:

1. Structuring the innovation process and defining the process clearly.
2. Permitting flexibility and informal work to support the creativity in these processes.

According to the study it was found that innovation management as a creative discipline does not have a typical process flow and thus innovation process should be formalized partially. Also in the study by Steiber and Alänge (2013) on Google, they identified that the lack of policies, structure and processes influenced innovation positively. Whereas Drews et al. (2013) state that the innovation process should be formalized partially, the study by Steiber and Alänge (2013) reveal that it is not possible to have a manager in charge for innovation or formalize the innovation process as anyone could give ideas at Google.

Martins and Terblanche (2003) identified the following determinants of organisational culture that influenced innovation:

1. Strategy
2. Structure
3. Support mechanisms (e.g. rewards and resources)
4. Behaviour that encourages innovation
5. Open communication

Duygulu et al. (2015) explored eight dimensions of organisational culture that impact innovation. They are knowledge sharing, learning and development, social networks and cooperation, allocation of free time, tolerance of mistakes, rewarding and incentive system, managing differences and teamwork.

The study by Schneider et al. (1996) has categorized climate into four dimensions. They are as follows:

- Nature of interpersonal relationships - Whether there is trust, teamwork based relationships, support for new recruits and if employees feel valued by the organisation.
- Nature of hierarchy - How decision making is carried out, whether there is team spirit and if special facilities are provided to certain employees.
- Nature of work - Whether the work is challenging and adequate resources given to the employees do it.

- Focus of support and rewards - What aspects of performance are reviewed and rewarded, what kind of projects get support, whether quantity or quality of the work is reward and the basis for how people are recruited.

Ahmed (1998) discusses the importance of strong cultures in organizations. Steiber and Alänge (2013) identified in their study of Google, appropriate cultures and climates for innovation considered important by Ahmed (1998), e.g. cultural norms that promote innovation. Whereas Ahmed (1998) found that leaders need to be aware of their impact in a culture of innovation, in the study by Steiber and Alänge (2013) found that in Google the founders drove the innovation culture and fostered it. Steiber and Alänge (2013) also found most of the determinants identified by Martins and Terblanche (2003), in their study of Google. Whereas Martins and Terblanche (2003) considered the need for handling conflicts, Steiber and Alänge (2013) did not and Duygulu et al. (2015) discussed that it was important the way a mistake was handled as it could impact an employee's innovativeness. Schneider et al. (1996) make a broad overview of the heading climate and refer to several of the issues discussed under other headings, such as organisational structure, and reward systems.

2.2.5.2 Leadership

Numerous studies highlight the importance of support for innovation and have found that there is a positive relationship between an organization's culture on its innovation when the support for innovation is high (Ahmed, 1998; Choi et al., 2013; Sharifirad & Ataei, 2012; Stamm, 2009; Tushman et al., 2010).

Leadership is the process of influencing others towards achieving a desired outcome (Jong & Hartog, 2007). In the qualitative study carried out by Jong and Hartog (2007), they interviewed 12 managers and identified 13 leadership behaviours that included innovative role modelling, intellectual simulation, stimulating knowledge diffusion and support for innovation.

Leaders need to inspire employees to be innovative. They need to lead by example. Also, in order to search for new ideas, they need to actively listen to their employees. (Jong & Hartog, 2007; Stamm, 2009). The study by Sharifirad and Ataei (2012)

showed that adaptability and involvement were the key dimensions of organisation culture that could greatly impact innovation culture.

Previous research has focused on the importance of leadership for sustaining innovation in organisations (Jong & Hartog, 2007; Stamm, 2009). Whereas Steiber and Alänge (2013) have discussed the importance of selecting and developing leaders so that they could support innovative employees.

2.2.5.3 Organisational Structure

An organisational structure is defined as the arrangement of responsibilities, authorities and relationships between people (Manning et al., 2006). A considerable amount of literature has been published on how an organisational structure influences innovation (Ahmed, 1998; Daugherty et al., 2011; Steiber & Alänge, 2013).

The following characteristics of organic and mechanic structures were stated in the study by Ahmed (1998).

Organic structure

- Freedom from rules
- Participative and informal
- Opinions are valued
- Face to face communication
- Inter-disciplinary teams break down departmental barriers
- Emphasis on innovative collaboration and aims
- External ideas are valued
- Flexible towards varying needs
- Non-hierarchical
- Information flow downwards as well as upwards

Mechanistic structure

- Separate departments
- Individual specialisation
- Hierarchical
- Bureaucratic
- Extensive use of rules and procedures
- Formal methods of reporting
- Long decision chains and slow decision making
- Written communication
- Information flow upwards
- Directives flow downwards

Organic structures promote innovation and mechanical structures hinder it (Ahmed, 1998; Arad et al., 1997; Martins & Terblanche, 2003). In the study on Google by Steiber and Alänge (2013), it was found that employee's innovative ideas were welcome through a bottom up process and clear goals and priorities were set from the top. In the study by Martins and Terblanche (2003), found that organisational culture has an impact on organisational structure. The values inculcated by the structure can encourage or limit novelty in organisations. Arad et al. (1997) also found that when employees are empowered to involve in decision making in problem solving, it is positively related to innovation.

2.2.5.4 Reward System

Lim and Ling (2012) defined a reward system as the package/system that contains rewards and benefits, e.g. holiday leaves, medical benefits, transport allowance and performance bonus.

In the study by Ahmed (1998) the key attributes of the cultural norm awards and rewards identified are as follows:

- valued ideas
- support by the management
- respect for new ideas

- celebration of achievements
- suggestions are implemented
- encouragement

The study by Steiber and Alänge (2013) found that the performance and incentive system at Google consisted of key performance indicators, a process of evaluation, and material versus non-material incentives. The company's mission and values influenced how the employees were guided. Explicit awards and spot bonuses were given as extrinsic incentives for innovation. The intrinsic motivation to innovate was due to the ability to work with talented employees, develop world class solutions and technical challenges in the projects.

Several studies have revealed that organizations highlight individual based rewards in order to encourage innovation as variations in rewards can be justified based on performance and is a method to stimulate performance (Carneiro, 2008; Oliver & Kerrin, 2002; Lawson & Samson, 2001). Amabile (1988) argues that money should not be used to bribe employees to generate novel thoughts. Ahmed (1998) discusses rewards under cultural norms that promote innovation. He also states that if rewards are not based on innovation but on task performances, employees will be cautious and hesitant.

Lawson and Samson (2001) stated that successful innovative organisations had reward systems that consisted of dual ladder systems, suggestion schemes, public recognition, and financial rewards. Whereas in the study by Steiber and Alänge (2013), it was found that the performance and incentive system was not a major factor behind Google's innovativeness. However, it served to recognise innovative employees. It was also found in the study of Google that the intrinsic motivation was identified as more vital for innovation.

2.2.5.5 Organisational Learning

In the study by Steiber and Alänge (2013) on Google, they found that organisational learning which was defined as the systems for learning from successes and failures was not a major factor that influenced innovativeness at Google. This was due to the fact that the study revealed majority of the interviewees saw that learning was vital

for current products and process improvements than new innovations. It was also found that open and intensive communication was vital for rapid learning.

Midler (2013) discusses the following proposed patterns by the project organizing field to analyse how projects and permanent organizations interact within innovation trajectories.

- From a firm's strategy formulation to the creation of pilot projects
- From project-to-project learning
- From project-to-permanent organization capitalization

Based on these patterns, organizations need to analyse the process and understand how each interaction can proceed and the obstacles that need to be overcome.

In the study by Sicotte et al. (2014), they found that the management of innovation portfolios need to build competencies that allow learning to form a new lead over rivals in products and markets. The aims of innovation portfolio management are balance, value maximization, and strategic alignment. Innovation portfolio management is related to the prioritization of new product or R&D projects. The dependent variable in this study was innovative performance and firm size was the control variable.

Whereas Steiber and Alänge's (2013) study on Google revealed that learning was vital for current products and process improvements than new innovations, Sicotte et al. (2014) found that innovation portfolio management need to build skills where learning would help them to be ahead of the competitors.

In the qualitative study by Duygulu et al. (2015), they interviewed 38 R&D official representatives consisting of R&D directors, managers and coordinators and found that learning and development is one of the major attributes of an innovative culture.

2.3 Innovation Management and Project Management

The study by Damanpour and Aravind (2012) examines the conceptual development, generation and adoption processes, antecedents, and influences of managerial innovation on organizational conduct. It aims to help extend and advance theory and research on innovation process and outcome in organizations. The dependent variables identified were growth in output, productivity and employment.

Midler's (2013) study states that in today's innovative IT projects, it is important to sustain innovation strategies that fit the nature of the project.

The study by Davies et al. (2014) determined four windows of opportunity where an innovation strategy can drive innovation in a megaproject. They are:

- The bridging window – using ideas and practices from other projects and industries to create innovative project process, organization and governance structure
- The engaging window – using tendering and contractual processes by the client to encourage contractors and suppliers to develop novel ideas and innovative solutions
- The leveraging window – when clients, delivery partners, and suppliers are organized to develop novel ideas, new technologies, and organizational practices to improve performance
- The exchanging window - when ideas and resources for innovation can be combined with those of other projects in the wider innovation ecosystem to improve performance.

Project success

Product innovation can be regarded as a process that creates value. Hanisch and Wald (2011) proposed the development of a framework comprising of the following dimensions and sub-dimensions for project change management in innovative projects.

1. **Design**
    a. Strategy and structure
    b. Project management and project organisation
    c. Culture and social processes
2. **Context**
    a. Complexity
    b. Dynamics
    c. Uncertainty
3. **Goal**
    a. Value added
    b. Adaptability

Different types of projects are examined along the dimension "level of change, and/or innovation," and a categorization of projects is developed. In this study, project success was identified as the dependent variable and managerial activities as the independent one.

Bygstad and Lanestedt (2009) investigated to what extent ICT based service innovation can be successfully facilitated by traditional project management thinking. They found that ICT based service innovation is not associated with a tightly run project (focused on cost, time and quality) or a professional project

manager. Successful service innovation is found in projects with a strong integration with the service providing organization and the external users of the services.

According to Brockhoff (2006), in order to establish an efficient and effective project management, an optimization problem need to be solved via moderating effect of novelty. Specific characteristics of project managers are more important than more sophisticated planning aids in order to succeed in highly innovative projects. Whereas from the web based survey carried out by Müller and Turner (2007) found that the project success criteria and project success rates vary based on the industry, project complexity and the age and nationality of the project manager. The seven project success criteria the respondents used to rate with regard to their last project are as follows:

- End user satisfaction
- Supplier satisfaction
- Team satisfaction
- Other stakeholders' satisfaction
- Customer satisfaction
- Reoccurring business
- Self-defined criteria

The two stage model by Taylor and Levitt (2007) supports to understand technological innovations in firms in project networks where work processes are distributed in organisational boundaries and specialist firms carryout project work.

1. First stage – determine the alignment of an innovation to the existing allocation of work in a project network.
2. Second stage – If it is misaligned, organizations should enhance stability and shared interests.

The study carried out by Kapsali (2011) discussed why conventional project management practices lead to the failure of publicly funded innovation deployment

projects, and investigates how the use of systems thinking in project management can help projects be more successful. The study shows that the use of systemic project management, which includes providing flexibility in planning, communicating and controlling activities lead to successful innovation projects. The key finding is that systems thinking methods provide the flexibility to manage innovativeness, complexity and uncertainty in innovation projects more successfully.

2.4 Chapter Summary

An overview of the various perceptions and findings of previous research relevant to innovation management and organising of IT projects is provided in the above literature review. A critical review of the literature would indicate a widespread perception that innovation management plays a vital role in the software development process. In the light of research discussed in the literature review it is understood that IT innovation should not be limited to the management level but by establishing a culture of innovation would lead to the success of IT innovation management. A conceptualization of the problem derived from the above literature is used to guide the methodology described in the next chapter.

Table 2.4: Summary of the factors identified from the literature survey

Variables	***References***
Innovation success	(Aschhoff & Sofka, 2009) (Birchall & Armstrong, 2003) (Steiber & Alänge, 2013)
External environment	(Birchall & Armstrong, 2003)
Internal environment	(Birchall & Armstrong, 2003)
Innovation process	(Birchall & Armstrong, 2003)
Managing developments	(Birchall & Armstrong, 2003)
Output	(Damanpour & Aravind, 2012)
Productivity	(Damanpour & Aravind, 2012)
Employment	(Damanpour & Aravind, 2012)
Process innovations	(Inauen & Schenker-Wicki, 2012)
Product innovations	(Inauen & Schenker-Wicki, 2012)
Share of sales of new products	(Inauen & Schenker-Wicki, 2012)
Incremental innovations	(Inauen & Schenker-Wicki, 2012)
Radical innovations	(Inauen & Schenker-Wicki, 2012)
Open innovation strategies	(Inauen & Schenker-Wicki, 2012)
Firm's R&D investments	(Inauen & Schenker-Wicki, 2012)
Managerial activities	(Hanisch & Wald, 2011)

Variables	*References*
Firm size	(Inauen & Schenker-Wicki, 2012) (Sicotte et al., 2014)
Project size	(Brockhoff, 2006)
Project success	(Hanisch & Wald, 2011) (Bygstad & Lanestedt, 2009) (Brockhoff, 2006) (Müller & Turner, 2007)
Organizational impact	(Bygstad & Lanestedt, 2009)
Innovative performance	(Sicotte et al., 2014)
Novelty	(Brockhoff, 2006)
Project manager's characteristics	(Brockhoff, 2006)
Organisational culture	(Ahmed, 1998) (Choi et al., 2013) (Drews et al., 2013) (Duygulu et al., 2015) (Martins & Terblanche, 2003) (Schneider et al., 1996) (Sharifirad & Ataei, 2012) (Steiber & Alänge, 2013)
Leadership	(Ahmed, 1998) (Choi et al., 2013) (Jong & Hartog, 2007) (Sharifirad & Ataei, 2012) (Stamm, 2009) (Steiber & Alänge, 2013) (Tushman et al., 2010)
Reward system	(Ahmed, 1998) (Amabile, 1988) (Carneiro, 2008) (Lawson & Samson, 2001) (Lim & Ling, 2012) (Oliver & Kerrin, 2002) (Steiber & Alänge, 2013)
Organisational structure	(Ahmed, 1998) (Arad et al., 1997) (Daugherty et al., 2011) (Manning et al., 2006) (Martins & Terblanche, 2003) (Steiber & Alänge, 2013)
Organisational learning	(Duygulu et al., 2015) (Midler, 2013) (Sicotte et al., 2014) (Steiber & Alänge, 2013)

3. RESEARCH METHODOLOGY

3.1 Chapter Overview

In this chapter, the methodology to be used in order to identify the different innovation and project organising techniques used in the IT industry, the rationale behind the selected research approach, participants and procedure details are described. The previous chapter discusses a subset of literature based on its relevance to the issues surrounding innovation management in IT projects. The theoretical framework derived from the literature review is also described.

3.2 Theoretical Framework

The theoretical framework was developed from the literature review. From the factors identified from the literature survey, some were not included in the theoretical framework. The reasons for those factors to be omitted are as follows:

The factor, employment growth is linked to innovation. Acs and Armington (2004) identified that employee growth has other factors affecting it. Therefore, measuring the contribution of innovation is difficult. The factor, growth in output is also linked to innovation. However, Fountas et al. (2002) found that it is influenced by other factors such as inflation and inflation uncertainty. Therefore, it is not suitable to be used in this study. The factor productivity will not be used as Feldstein (2008) states that it is influenced by rise in wages. Share of sales of new products was also not used because Cao and Li (2015) found that this factor is controlled by many variables such as advertising, working capital and competition. The factor firms' R&D investments was not used as Lai et al. (2015) found that it is influenced by financial autonomy, profitability degree, company size, capital structure, goodwill and patents, human resources and business resources. The factor firm size is not used because Kumar et al. (1999) found that it is influenced by other factors such as institutional factors consisting of the effectiveness of the legal system and financial market developments and also the amount of capital and the market size of the firm. Project size was also not used as Park and Papadopoulou (2012) found that it is influenced by cost and duration.

Table 3.1: Summary of the factors used in the theoretical framework

Variables	***Type***	***Dimensions***	***Measurement***	***References***
Trend	IV	Cultural	Employee empowerment Gamification	(Ahmed, 1998) (Amabile, 1988) (Carneiro, 2008) (Choi et al., 2013) (Drews et al., 2013) (Duygulu et al., 2015) (Lawson & Samson, 2001) (Lim & Ling, 2012) (Martins & Terblanche, 2003) (Oliver & Kerrin, 2002) (Schneider et al., 1996) (Sharifirad & Ataei, 2012) (Steiber & Alänge, 2013)
		Leadership	Talent development	
		Rewards	Reward structures	
		Resources	Recruitment process	
Project organisation	DV	Resources	Team distribution	(Ahmed, 1998) (Amabile, 1988) (Arad et al., 1997) (Birchall & Armstrong, 2003) (Carneiro, 2008) (Choi et al., 2013) (Daugherty et al., 2011) (Jong & Hartog, 2007) (Lawson & Samson, 2001)
		Leadership	Support for innovation	
		Organisational structure	Type of organisational structure	

Variables	***Type***	***Dimensions***	***Measurement***	***References***
		Rewards	Incentives for innovation	(Lim & Ling, 2012) (Manning et al., 2006) (Martins & Terblanche, 2003) (Oliver & Kerrin, 2002) (Sharifirad & Ataei, 2012) (Stamm, 2009) (Steiber & Alänge, 2013) (Tushman et al., 2010)

3.3 Methodological Approach

Quantitative research is not suitable for this study because it is not possible to explore a problem in depth. The research study followed a qualitative approach. The reasons to use a qualitative approach for this study were as follows:

- It is appropriate for the research questions in this study than any other approach because it focuses on the participant's experiences.
- In order to understand the phenomenon, the participant's experiences in managing and making decisions with regard to innovation need to be studied comprehensively. This is attained through the use of interviews.
- To observe participants' perceptions and thoughts regarding innovation management trends used within the IT industry.
- Absence of data from innovation management perspective of organising IT projects in an Asian context of Sri Lanka.
- It is field oriented and innovation management trends can be studied in the natural setting.
- The descriptive nature of the results support to substantiate the findings.
- Enhances the values in using innovation management to organise IT projects which would be useful to apply the lessons learnt from this study.

3.3.1 Philosophical Perspective

Critical research is not used in this study because it criticizes social norms, groups, and problems without providing options to improve the society. The reasons to use positivist and interpretive perspectives are as follows:

- A positivist perspective was suitable for the study because it permits to combine several data collection and analysis methods to illustrate different types of data in order to discover various aspects. Also the innovation management data in this study is independent of the researcher.
- An interpretive perspective was suitable as it uses a small sample and also building theory. The reason behind to use this approach for this study was that preliminary review of opportunities to study innovation management in the Sri Lankan context revealed that only a selected set of organisations

would be relevant for the research and a deeper study of management trends at each of these organisations to be necessary. It is assumed that the organisation of IT projects could be influenced by innovation management trends. Therefore, interpretive is used to explore the changes and impacts by innovation management trends.

3.3.2 Research Method

A case study approach (Yin, 2003) was suitable for this research due to the following reasons:

- It is aimed to answer "how" and "why" questions.
- The participant's behaviour cannot be manipulated.
- Willingness of the researcher to cover contextual nuances.
- Use a smaller sample base and because of it there is greater focus on the individual case.

Also the use of grounded theory (Glaser & Strauss, 2009; Miles & Huberman, 1994) is suitable because:

- As it is an inductive method it will support to develop a theory that is grounded in the data.
- Current models in innovation management and organising IT projects in a Sri Lankan context are inadequate.
- In order to study the innovation management process and also obtain a deeper understanding of it.

3.4 Procedure

In this section, the procedures to recruit participants and collect data are explained in detail.

3.4.1 Participant Recruitment

Theoretical sampling is used to recruit participants for the research on the basis of relevancy to the emerging theory. In this study a total of 14 participants who were relevant to the research area took part in the study. The individuals were a cross

section of people directly involved in innovation - Heads of Research, Product Managers, Project Managers and Software Architects. The criteria for selecting the participants were based on their experience and knowledge in the research area.

3.4.2 Data Collection Technique

For this qualitative research study, data was collected through open-ended questions to interview corporate informants to gather data to analyse perceptions of the participants with regard to innovation management in IT projects. The theoretical framework was used to develop the interview questions. Interviews were used to collect data as the participants' experiences can be thoroughly explored by conducting interviews. By using this approach, each organisation was assessed to see whether innovation is fostered using semi-structured expert interviews. The study included face-to-face interviews collected over a two-month period.

After a selected expert interview with a key person from one of the largest e-Health providers to see the validity of the questions, a series of semi-structured interviews was conducted. Each interview lasted approximately 45 to 60 minutes and was handwritten and later transcribed for analysis purpose. MAXQDA, a software that supports the analysis of qualitative data was used to electronically store, document and structure all interview transcripts.

3.4.2.1 Interview Guideline

The interview guideline was developed based on the theoretical framework. It was semi-structured with open-ended questions. The structure of the interview guideline remained constant throughout the whole research process.

Trend

- Do you foster innovation through reward structures? If so how, if not why?
- Do you foster innovation through your recruitment process? If so how, if not why?
- Do you promote innovation through your HR development process? If so how, if not why?

- Do you support innovation through employee empowerment? If so how, if not why?
- Do you foster innovation through gamification? If so how, if not why?

Project Organisation

- Do you foster innovation through team distribution? If so how, if not why?
- Do you get support for innovation from the management? If so how, if not why?
- Do you encourage innovation through your organisational structure? If so how, if not why?
- Do you provide incentives for innovation? If so how, if not why?

3.5 Chapter Summary

This chapter has shown the research methodology that will be used in the study which is of qualitative in nature. It also includes how data will be collected from the interviews carried out with research participants. In the next chapter, the data gathered will be analysed and thereafter best suited innovation management techniques for different types of IT projects will be derived.

4. ANALYSIS

4.1 Chapter Overview

In this chapter, the data gathered from the open ended interview transcripts is analysed in a qualitative manner. Qualitative content analysis and grounded theory approaches (Glaser & Strauss, 2009; Miles & Huberman, 1994) are used in this research because the phenomena studied is specified in the interview questions and forms the basis for understanding why different innovation management trends and organisation of IT projects are used.

4.2 Analytical Strategy for Interview Transcripts

The analytical strategy consisted of grounded theory (Glaser & Strauss, 2009; Miles & Huberman, 1994). For the questions, what aspects of innovation management influences the organisation of IT projects and for different innovation management methods what is the ordering of the factors which influence the organisation of IT projects, the following three steps were followed during the analysis (Miles & Huberman, 1994):

1. Data Reduction
2. Data Display
3. Drawing conclusions

4.2.1 Data Reduction

In order to carry out the exploratory and inductive analysis of this study the 14 interviews resulting in 29 pages of interview transcripts and notes have been stored and analysed with the help of MAXQDA. In order to reduce the data, open coding (Glaser & Strauss, 2009) was followed. 59 codes that were grounded in 126 quotations were identified. A total of 291 code assignments were found. The reason for this was the multiple coding for a single quotation. Figure 4.1 illustrates the 59 codes identified using open coding.

Color	Parent code	Code	All coded segments
	Transactional Rewards	Employee Benefits	19
		Gamification	19
	Performance Appraisal	Reviewing Performance	17
		Employee Empowerment	16
		Team Distribution	15
	Organisation Structure	Innovation Business Model	13
	Recruitment	Recruitment Strategies	13
		Management Support	13
	Innovation Incentives	Financial Incentives	12
	Relational Rewards	Recognition	11
	Organisation Structure	R&D	9
	Organisation Structure	Flat	9
	Job Performance Evaluation	Performance Appraisal	7
	External Recruitment	Educational Institutions	7
	Innovation Incentives	Moral Incentives	7
	Transactional Rewards	Salary raise	7
		Training and Development	7
	Organisational Training	Workshop	6
	Selection Considerations	Person-job Fit	5
	Management Support	Encouragement	5
	Organisation Structure	Open Communication	5
	Employment Tests	Work Sample Tests	4
	Recruitment	Internal Recruitment	4
	Management Support	Appreciation	4
	Transactional Rewards	Gifts	4
	Training and Development	Development	4
		Recruitment	4
	Transactional Rewards	Promotion	3
		Organisation Summary	3
		Reward Structure	3
	Relational Rewards	Autonomy	2
	Transactional Rewards	Bonus	2
	Organisational Training	Demonstration	2
	Innovation Incentives	Patents	2
	Organisational Training	Mentoring	2
	Management Support	Funding	2
	Relational Rewards	Work Experience	2
		Organisational Learning	2
	Organisation Structure	Team Size	2
	Training and Development	Organisational Training	2
	Organisation Structure	Designations	2
	Training and Development	Skill Search Tool	1
		Organisation Improvement	1
	Management Support	Procedural	1
	Organisation Structure	Location	1
	Reward Structure	Transactional Rewards	1
	Relational Rewards	Responsibility	1
	Performance Appraisal	Planning Performance	1
		Organisation Structure	1
	Organisational Training	Technology-Based Learning	1
	Organisation Structure	Classless Management	1
	Recruitment	External Recruitment	1
	Organisational Training	Outdoor Training	1
	Management Support	Motivation	1
		Job Performance Evaluation	0
	Reward Structure	Relational Rewards	0
	Recruitment	Employment Tests	0
	Recruitment	Selection Considerations	0
		Innovation Incentives	0

Figure 4.1: Code System

Figure 4.2 illustrates the examples of quotations and their assigned codes.

Color	Code	Segment
●	Reward Structure\Relational Rewards\Responsibility	If someone shows talent give opportunities to lead the team. (Based on expertise, not age but how suitable you are)
●	Job Performance Evaluation\Performance Appraisal\Planning Pe	We give employees smart objectives at the beginning of the year. Successful completion of the delivery. Objectives depend on the opportunity. Are objectives met – Met expectations.
●	Management Support\Procedural	procedural support (e.g. access to people).

Figure 4.2: Code Segments

Thereafter axial coding was used to link the codes to categories and sub categories that facilitated to reassemble the data and to form the theory. The coding scheme was refined by introducing several sub categories and categories. Next, selective coding was used to selectively add new codes and properties where required and further refine the sub categories and categories. The memos supported to structure the codes during data analysis. The creative coding feature, where a plain map is used to visually arrange the codes in MAXQDA was used to build categories from open coding.

4.2.2 Data Display and Drawing Conclusions

A variety of options to visualize data is presented using MAXQDA. In this stage, the responses for the research questions were reviewed. The questions were focused on the aspects of innovation management that influence the organisation of IT projects and for different innovation management methods what is the ordering of the factors which influence the organisation of IT projects. In order to protect the participants' anonymity, they were each assigned with a capital letter to represent them:

A – An Associate Software Architect at a prominent innovative financial technology business.

B – Vice President - Research at a lean enterprise middleware company.

C - Head of Research at a leading international travel solutions company.

D - Director Advanced Services and TQM at a global technology innovation services provider.

E – Director at a global technology innovation services provider.

F - Manager Software Engineering at an e-Health provider.

G - Team Lead - Client Managers at a cloud supply chain business.

H - Head of Engineering at a leading telecommunication value added services specialist.

I – A Technology Manager at a leading provider of software product engineering services to ISVs globally.

J – A Software Architect at a prominent innovative financial technology business.

K - Senior Manager Software Development at a global enterprise software company.

L - Senior Manager of Human Resources at a leading restaurant industry solutions provider.

M - Head and Director of Software at a global technology innovation services provider.

N - Senior Director of Technology and Chief Software Architect at a global information technology services company.

4.3 Discussion

4.3.1 The Aspects of Innovation Management That Influence the Organisation of IT Projects

4.3.1.1 Employee empowerment impact in organising innovative IT projects

Colour	Parent code	Code	All coded segments
●		Employee Empowerment	16

Figure 4.3: Code segment ranking – Employee Empowerment

Code System	A	B	C	D	E	F	G	H	I	J	K	L	M	N	SUM
Employee Empowerment	▪	▪	▪	▪	▪	■	▪	■	▪	▪	▪	▪	▪	▪	16
SUM	1	1	1	1	1	2	1	2	1	1	1	1	1	1	16

Figure 4.4: Code frequency per document – Employee Empowerment

Code System	A	B	C	D	E	F	G	H	I	J	K	L	M	N	SUM
Employee Empowerment	■	■	■	■	■	■	■	■	■	■	■	■	■	■	14
SUM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14

Figure 4.5: Number of documents per code – Employee Empowerment

For the core category of Employee Empowerment, as shown in Figure 4.3, 1 code was conceptualized and grounded in empirical observations within interview transcripts. Figure 4.4 showed that as a result a total of 16 quotations distributed among 14 documents as shown in Figure 4.5 were linked to 1 code.

All interviewees supported this statement. In particular, interviewees A, H, J, K and N gave the employees the freedom to think and come up with new ideas and innovation. Interviewee F mentioned that they allow the employees to make decisions to come up with what needs to be done. They use scrum agile, which is a collective way to do things better.

Interviewee C mentioned that the employees have their own way of working. It shows that the work environment too contributes to the generation new ideas. Whereas G said that the employees have to follow the standard operation procedures. B, H and M's view on empowering was that a problem would be given by seniors and how the engineers would propose a solution for it. In M's organisation even the interns are allowed to make process improvement suggestions. In order to be with cutting edge technology interviewee D would allow the employees to select a suitable technology after evaluating a set of technologies. Four interviewees (E,I,L,M) believed that the ideas the employees are empowered to come up with should be of business value. Whereas in K's organisation, just like the innovation management technique which was followed at Google before, 20% of the time is given for personal projects. K's organisation allows the employees to take risks and they also encourage work life balance.

In interviewee E's organisation there is a separate team to capture ideas. H's organisation had sessions to bring out ideas and a panel will select and it can be developed later. If the prototype is successful, then continue with spiral model. L's organisation also conducts weekly innovation sessions in order to empower employees to understand and learn new technologies.

Triangulating the findings with results from online press showed that organisations A,I,K and N have been ranked as Sri Lanka's best companies to work for 2015 by the

Great Place to Work Institute in partnership with the LMD and Ceylon Chamber of Commerce. Organisation I and N were the gold winners at the HRM Awards 2014. Also, I received a special award in 2014 for talent management, and was recognised for talent management at Asia's Best Employer Brand Awards 2013 by the Great Place To Work Institute. Therefore, employee empowerment is one of the key aspects of innovation management that influence the organisation of IT projects.

4.3.1.2 Gamification impact in organising innovative IT projects

Colour	Parent code	Code	All coded segments
●		Gamification	19

Figure 4.6: Coded segment ranking – Gamification

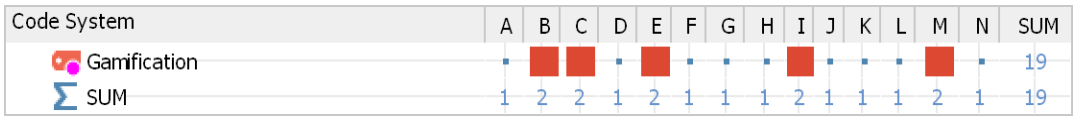


Figure 4.7: Code frequency per document – Gamification

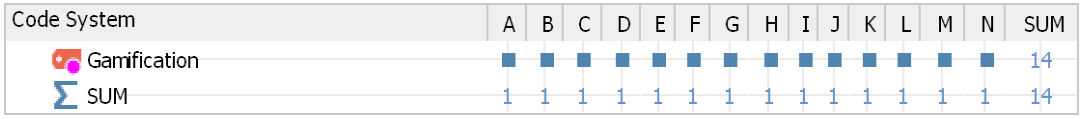


Figure 4.8: Number of documents per code – Gamification

For the core category of Gamification, as shown in Figure 4.6, 1 code was conceptualized and grounded in empirical observations within interview transcripts. Figure 4.7 showed that as a result a total of 19 quotations distributed among 14 documents as shown in Figure 4.8 were linked to 1 code.

5 of 14 interviewees (A, G, H, K and L) disagreed with this point. Interviewee A mentioned that there was no proper scheme within the organisation and other factors were more significant than that. In order to support A, H also mentioned that gamification was not tested within the organisation. Interviewee G said that employees are free to make suggestions but the ideas need to be approved by the manager. Employees are free to take to their managers but not free to carry out. C mentioned that gamification was not a main strategy to foster innovation and that

there were other factors more significant than that. K describes that gamification is not needed and it is fading and innovation was retained through other factors. L's view was that gamification in the business was not applicable.

9 of 14 interviewees B, D, C, E, F, I, J, M and N supported gamification by conducting competitions. Their organisations had competitions to come up with new product ideas which were not available in the market. Also B had another hackathon to solve a problem existing in the customer environment due to a newly deployed version. They would build a simpler version and show it to the customer and have internal agreements. C's organisation also conducted a competition to remove bugs in the existing codebase and reward employees who had removed the highest number of bugs. E's organisation conducted innovation challenges to bring out best ideas and rewarded the employees at the year end. F's organisation organised developer days so that employees could come with new ideas and they also supported interns to come up sample ideas for the existing product. I's organisation had a formal innovation programme with a Programme Manager assigned to handle innovation. The sports committee grouped the teams. A platform was created to enhance organisation knowledge where a virtual economy was created. Employees got points for innovative blog posts et cetera and could use those points to redeem items in the auction consisting of devices, training, foreign training or exchange currency. Because it was becoming a mania, the system had to be taken down. J's organisation conducted a hackathon to bring out ideas to make the world a better place by contributing those ideas to create a platform for corporate social responsibility projects. In M's organisation in order to change the mindset of the employees to be innovative, an innovation challenge was conducted. This had been conducted for three consecutive years. The ideas would come from vendors, clients and employees. A prototype was developed and a demo was done for the client to buy. M was in total agreement in that gamification was one of the trending ideas to foster innovation and also mentions that it is not the only way but one of the key ways. Interviewee N said that they used a tool to publish an idea, like it and get badges. It behaved more like a social media forum. B's organisation would also fund to present a research paper or talk which is accepted at a research conference in order to support gamification.

Findings derived from grounded analysis of interview transcripts were verified by analysing articles appearing in online press. Organisation B received the silver award under Research and Development category and also the overall gold award in the NBSQA 2010. C won the gold in NBSQA 2013 and D won it in 2015 in the R&D category. D was also judged as the overall winner in NBSQA 2015. I won the gold award in the Media and Entertainment category in NBSQA 2014. This information helped to triangulate the results of the study.

As majority of the interviewees believed that gamification supports to foster innovation and triangulating the findings with results from press showed, gamification is one of the key aspects of innovation management that influence the organisation of IT projects.

4.3.1.3 Talent development impact in organising innovative IT projects

Colour	Code	All coded segments
●	Training and Development	7
●	Training and Development\Organisational Training\Workshop	6
●	Training and Development\Development	5
●	Training and Development\Organisational Training	2
●	Training and Development\Organisational Training\Demonstration	2
●	Training and Development\Organisational Training\Mentoring	2
●	Training and Development\Organisational Training\Outdoor Training	1
●	Training and Development\Organisational Training\Technology-Based Learning	1
●	Training and Development\Skill Search Tool	1

Figure 4.9: Coded segment ranking – Training and Development

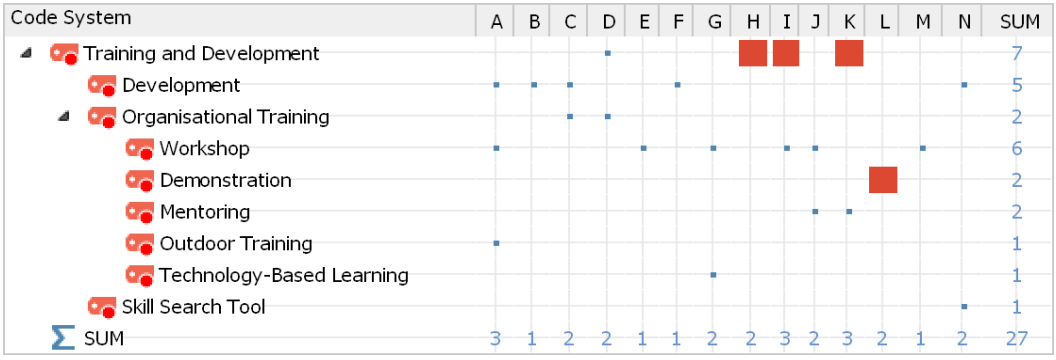


Figure 4.10: Code frequency per document – Training and Development

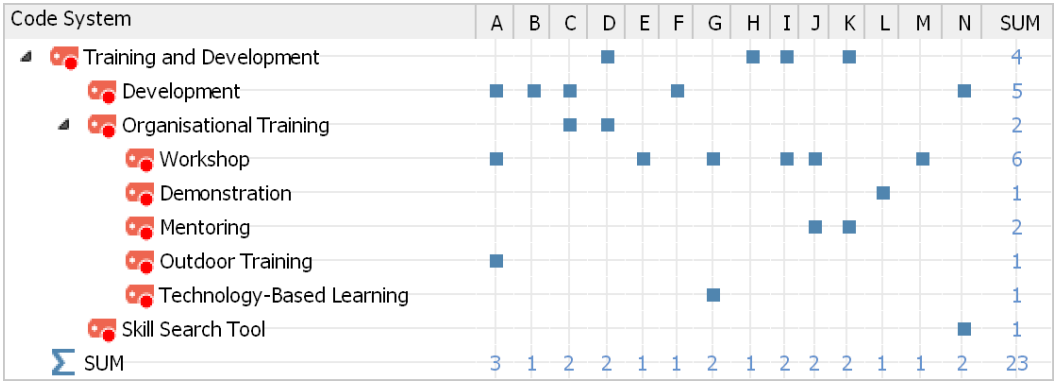


Figure 4.11: Number of documents per code – Training and Development

For the core category of Training and Development, as shown in Figure 4.9, 9 codes were conceptualized and grounded in empirical observations within interview transcripts. Figure 4.10 showed that as a result a total of 27 quotations were linked to 9 codes.

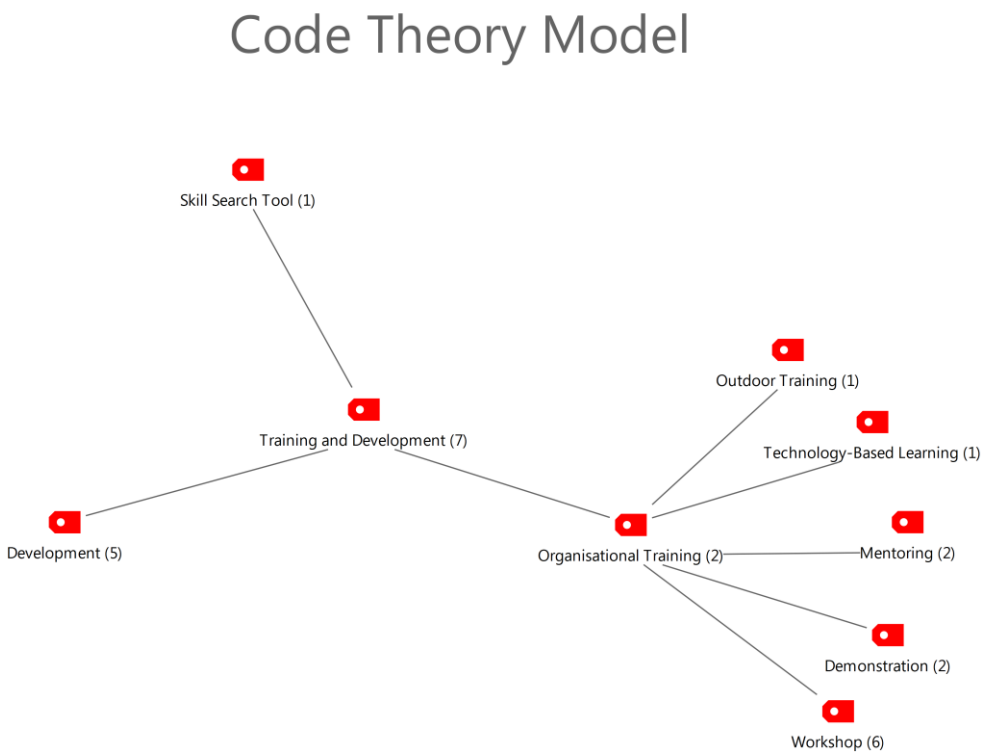


Figure 4.12: Code Theory Model – Training and Development

As shown in Figure 4.12, the codes were then grouped into 3 higher order categories and 5 subcategories. The three categories were follows:

- Skill Search Tool – a tool developed to search for employees with skills which are crucial for the organisation to survive.
- Organisational Training - improvement of knowledge, skills and attitude to perform the current job.
- Development - effort that is oriented more towards broadening an individual's skills for the future responsibilities.

The subcategories were the methods of conducting organisational training.

- Outdoor Training - outbound trainings.
- Technology-Based Learning - web-based training programs.
- Mentoring – mentoring programmes and guiding employees in the right career path.
- Demonstration – weekly innovation sessions presented by teams or individuals.
- Workshop – trainings for out of the box thinking and creativity design, conferences on how to innovate, coaching for innovation challenges.

The code with the highest density was Training and Development, which had been grounded 7 times, as opposed to the least dense codes Outdoor Training, Technology-Based Learning and Skill Search Tools each having only one grounding in empirical data. A total of 7 quotations distributed among 4 documents were linked to the code Training and Development and was considered a weak code. Whereas the code Workshop had a total of 6 quotations distributed among 6 documents and was considered a strong code.

All but one interviewee agreed with this statement. Interviewee H disagreed with this statement as H's organisation does not conduct any talent development sessions in order to promote innovation. They believe that they should educate themselves to

learn the language by self-studying. Also they do not have any plans as they find day to day work challenging.

Interviewee D is planning to do talent development at a corporate level. I and K supported this statement. I's organisation gives sponsorships to attend conferences. Also they have a department to handle trainings and internship requests. K also mentioned that their organisation also sponsors conferences as well as industry talks. Interviewee K mentioned that when they recruit employees, if a person has done different things they might hire and train them.

Interviewees A, B, C, F and N supported Development. A allowed employees to follow research because they value it. They also allowed the employees to leave early for their Masters classes. They also provided grants and funds for research which did not necessarily have to be related to the business. This was all done so that they have T shaped people in the organisation. B's organisation sponsored for MSc programmes. Interviewee C mentioned that they sponsor for masters and other courses. They were also external supervisors and personal mentors of employees. F's organisation also funded MSc and small courses. They have established a developer community and encouraged innovation through it and also tied it with production in order to get ROI. E.g.: Tech talks and a developer day at least once a year to bring out new ideas. The Quality Assurance Engineers also have QA day for internal improvements. Interviewee N described that in order for their employees to present creative ideas they also have tech days and software exhibitions.

C said that training and supervision has an impact on recruitment. In order to support this statement, C cited that people have joined there when they had been offered higher salaries at other places because they liked what they do. Both J and M described that they were able to inspire the employees by bringing speakers who have excelled in innovations from the industry. Also J mentioned that technical aspects are handled at non HR level.

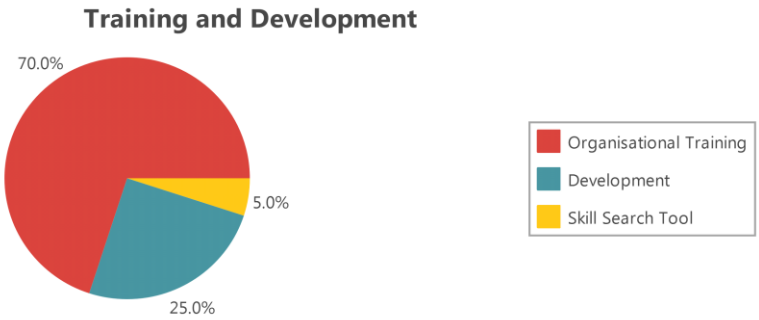


Figure 4.13: Pie chart – Training and Development

Figure 4.13 showed that overall 70% of interviewees considered Organisational Training while only 25% believed that Development fosters innovation. It can infer from these figures that Organisational Training was considered important to foster innovation. 13 of 14 interviewees believed that talent development supports to foster innovation whereas only 1 interviewee held the contrary view.

Triangulating the findings with results from online press showed that organisations A,I,K and N have been ranked as Sri Lanka's best companies to work for 2015 by the Great Place to Work Institute in partnership with the LMD and Ceylon Chamber of Commerce. Organisation I and N were the gold winners at the HRM Awards 2014. Also, I received a special award in 2014 for talent management, and was recognised for talent management at Asia's Best Employer Brand Awards 2013 by the Great Place To Work Institute. Therefore, talent development is one of the key aspects of innovation management that influence the organisation of IT projects.

4.3.1.4 Reward structures impact in organising innovative IT projects

Color	Code	All coded segments
●	Reward Structure\Transactional Rewards\Employee Benefits	19
●	Reward Structure\Relational Rewards\Recognition	11
●	Reward Structure\Transactional Rewards\Salary raise	7
●	Reward Structure\Transactional Rewards\Gifts	4
●	Reward Structure	3
●	Reward Structure\Transactional Rewards\Promotion	3
●	Reward Structure\Transactional Rewards\Bonus	2
●	Reward Structure\Relational Rewards\Work Experience	2
●	Reward Structure\Relational Rewards\Autonomy	2
●	Reward Structure\Transactional Rewards	1
●	Reward Structure\Relational Rewards\Responsibility	1
●	Reward Structure\Relational Rewards	0

Figure 4.14: Coded segment ranking – Reward Structure

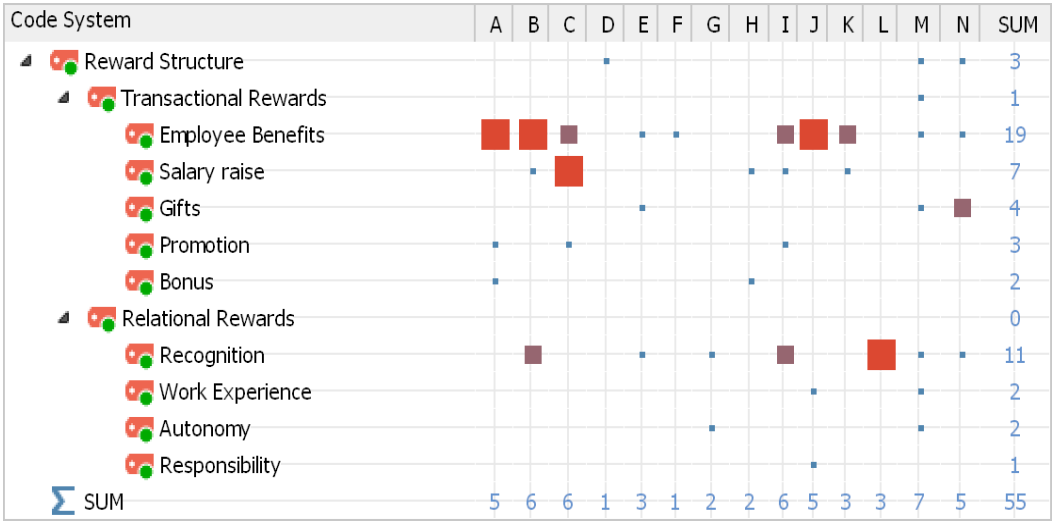


Figure 4.15: Code frequency per document – Reward Structure

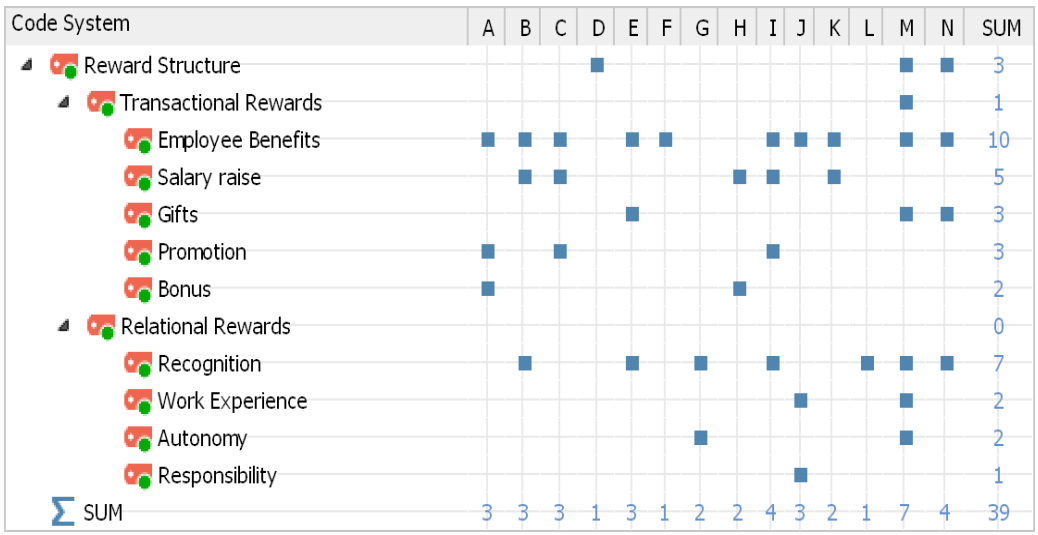


Figure 4.16: Number of documents per code – Reward Structure

For the core category of Reward Structure, as shown in Figure 4.14, 12 codes were conceptualized and grounded in empirical observations within interview transcripts. Figure 4.15 showed as a result a total of 55 quotations were linked to 12 codes. The code with the highest density was Employee Benefits, which had been grounded 19 times, as opposed to the least dense code Responsibility having only one grounding in empirical data. A total of 19 quotations distributed among 10 documents were linked to the code Employee Benefits and was considered a strong code. Whereas the code Responsibility was considered a weak code. A total of 7 quotations distributed among 5 documents were linked to the code Salary raise. A total of 11 quotations distributed among 7 documents were linked to the code Recognition and was considered as a strong code. Therefore, the most significant codes identified were in ascending order were Employee Benefits, Recognition and Salary raise.

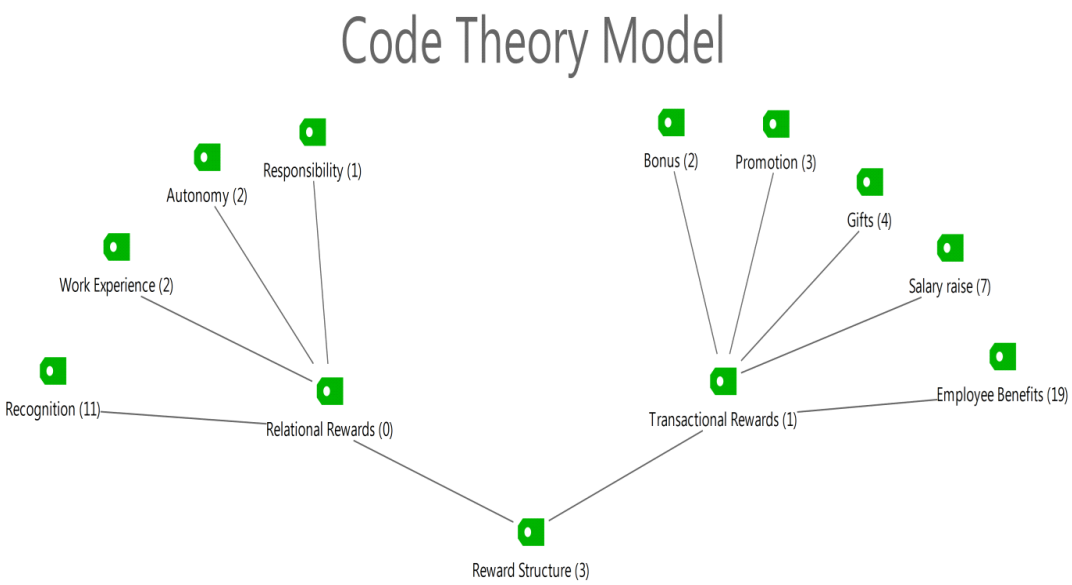


Figure 4.17: Code Theory Model – Reward Structure

As show in Figure 4.17, the codes were then grouped into 2 higher order categories and 9 subcategories. The two categories were the types of rewards. The subcategories were the types of relational and transactional rewards.

1. Relational Rewards – rewards which are intangible, non-financial and intrinsic.
    - Responsibility
    - Autonomy
    - Work Experience
    - Recognition – Outstanding awards, recognition at the year end, CEO thanking interns from a mail and extra mile recognition.
2. Transactional Rewards – rewards which are tangible, financial or extrinsic.
    - Bonus
    - Promotion
    - Gifts
    - Salary raise

- Employee Benefits - No pay leave for postgraduate studies abroad, grants and funds for conference papers and technical white papers, sponsorships for MSc programmes and other courses, represent the organisation in forums and training programmes.

The interviews showed A, B, C, E, F, G, H, I, J, K, L, M and N supported that reward structures impact in organising innovative IT projects. Interviewee D did not foster innovation through reward structures for the time being as his team is into services and product implementation. Also they are in the process of clearly defining criteria for innovation in 2016. Interviewee M indicated that it is not the main motivator as there should be creativity and out of the box thinking. G and M agreed that there should be autonomy for people to innovate.

Organisations of A, B, E, I, J, K and N fund employees to go and present accepted research papers and talks at research conferences. Interviewee A mentioned that the grants for conference papers need not be related to the business and whereas I said they support to attend conferences and it should be related to the business. Whereas in E's organisation, only conferences that are linked to the business are approved and the selection is based on the performance of the employee and the interest area. More weight is given to the interest area. J also said that they give opportunities to take part in industry forums and business innovation client forums. K described that the opportunities to attend conferences were ad hoc and it depends on the situation.

B's organisation sponsors half payment for MSc programmes followed by employees. In order to be entitled for this benefit, employees need to exceed expectations in the performance review. In F's organisation also they sponsor for MSc and short courses. Interviewees C also mentioned that they sponsor for masters and other courses. They also engage in personal mentoring for employees as well as being external supervisors for the employees who follow these programmes. In I's organisation too they fund masters fee provided it is related to the business. Interviewee J has proposed part sponsorships for MSc Research Programmes in order to recognise and encourage employees. M believed that by supporting technical white papers, the employees are motivated.

Interviewees B, C, H, I and K agreed that salary raise is an important rewarding mechanism to foster innovation through reward structures. C was in total agreement that innovation matters for salaries.

Interviewees B, E, G, I, L, M and N believed that through various ways of recognizing employees it would lead to fostering innovation. Interviewee B said that they give outstanding awards for major ideas found. Whereas in I's organization there were yearly innovation awards. Organisation recognising employees' innovation and support at the year-end was how it was carried out in E's organization. L had an internal scheme to recognize employees and yearly and quarterly innovation awards were awarded. N had a different way of approaching recognition. They had an internal system where you can post challenges and maintain team wikis. You will be awarded the innovator badge if your idea is accepted by the client.

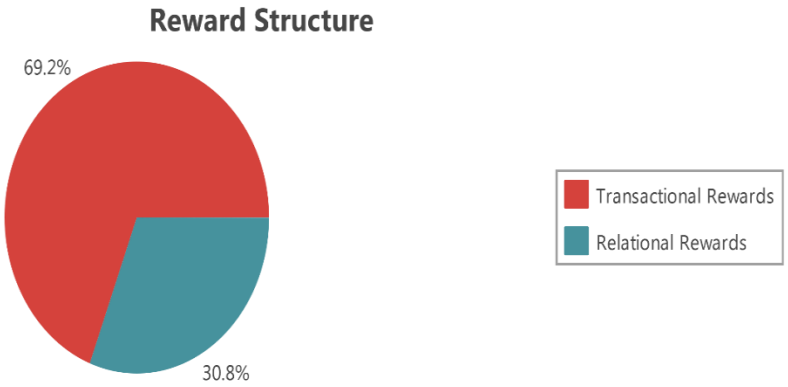


Figure 4.18: Pie chart – Reward Structure

Figure 4.18 showed that overall 69.2% engaged in Transactional Rewards to foster innovation while 30.8% used Relational Rewards. It can infer from these figures that Transactional Rewards are an important factor when considering fostering innovation through reward structures.

Triangulating the findings with results from online press showed that organisations A,I,K and N have been ranked as Sri Lanka's best companies to work for 2015 by the

Great Place to Work Institute in partnership with the LMD and Ceylon Chamber of Commerce. Organisation I and N were the gold winners at the HRM Awards 2014. Also, I received a special award in 2014 for talent management, and was recognised for talent management at Asia's Best Employer Brand Awards 2013 by the Great Place To Work Institute. Therefore, Reward Structure is one of the key aspects of innovation management that influence the organisation of IT projects.

4.3.1.5 Recruitment process impact in organising innovative IT projects

Colour	Code	All coded segments
●	Recruitment\Recruitment Strategies	13
●	Recruitment\External Recruitment\Educational Institutions	7
●	Recruitment\Selection Considerations\Person-job Fit	5
●	Recruitment	4
●	Recruitment\Internal Recruitment	4
●	Recruitment\Employment Tests\Work Sample Tests	4
●	Recruitment\External Recruitment	1
●	Recruitment\Selection Considerations	0
●	Recruitment\Employment Tests	0

Figure 4.19: Coded segment ranking – Recruitment

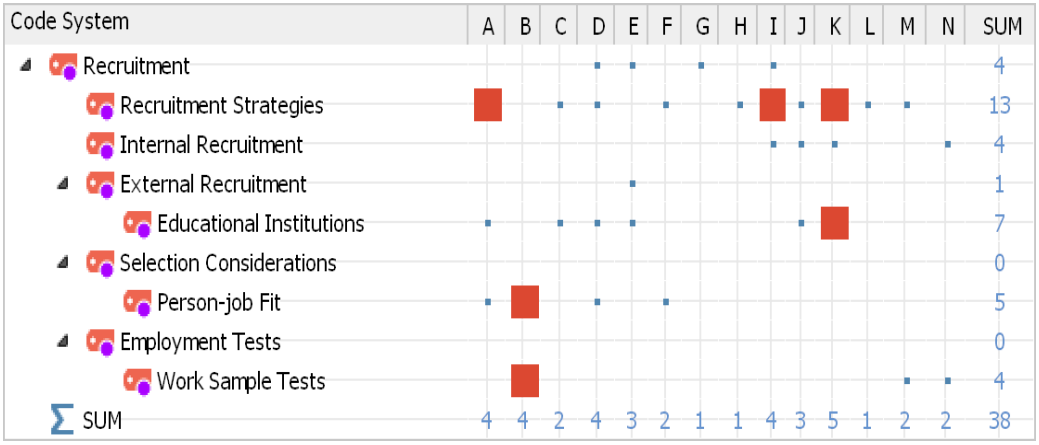


Figure 4.20: Code frequency per document – Recruitment

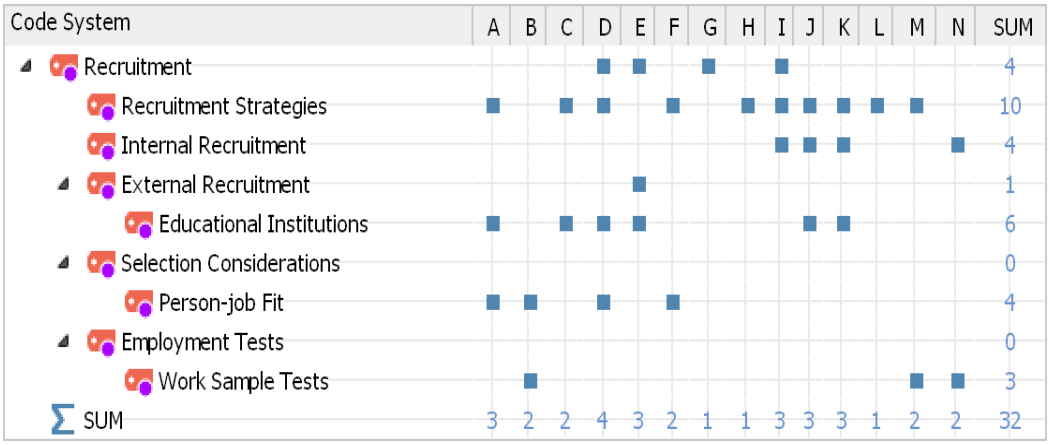


Figure 4.21: Number of documents per code – Recruitment

For the core category of Recruitment, as shown in Figure 4.19, 9 codes were conceptualized and grounded in empirical observations within interview transcripts. Figure 4.20 showed that as a result a total of 38 quotations were linked to 9 codes. The code with the highest density was Recruitment Strategies, which had been grounded 13 times and distributed among 10 documents were considered as a strong code as opposed to the least dense codes of Internal Recruitment and Work Sample Tests each had only four groundings in empirical data and distributed among 4 and 3 documents respectively.

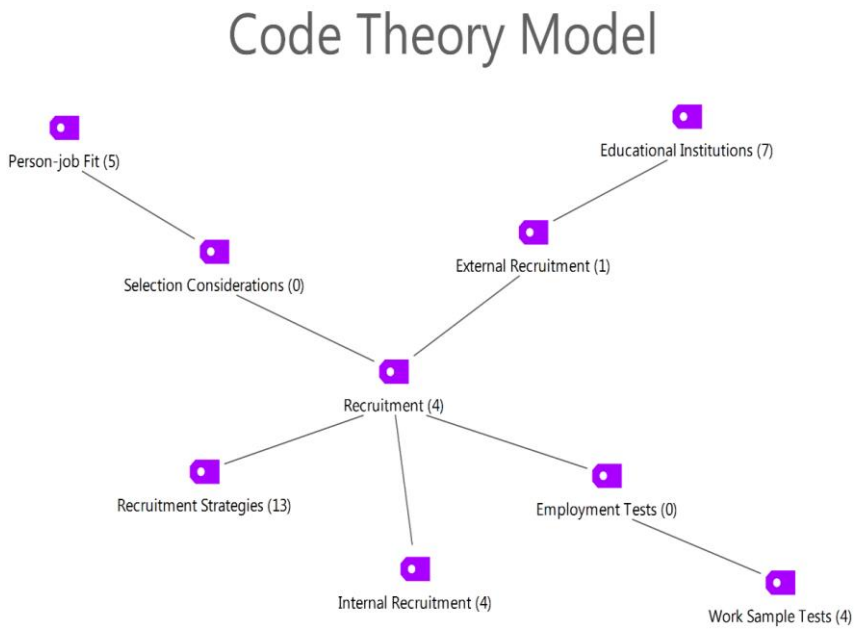


Figure 4.22: Code Theory Model – Recruitment

As shown in Figure 4.22, the codes were then grouped into 5 higher order categories and 3 subcategories.

1. Recruitment Strategies
2. External Recruitment - sources of candidates.
    - Educational Institutions
3. Selection Considerations
    - Person-Job Fit - job analysis identifies required individual competencies for job success.
4. Employment Tests - determining the suitability of a job applicant.
    - Work Sample Tests - require the applicant to perform tasks that are actually a part of the work required on the job.
5. Internal Recruitment

Interviewee D considers Recruitment to foster innovation. D believed that it is not the key criteria. An employee who is a postgraduate student has tried to provide support to improve their own technology related library. G's view was that it was not applicable. Their organization was more of a customer facing, stable product and at the last stage of the product cycle. They try to keep a steady team to bring the customers on board. I mentioned that no one can demand what team they would like to join when joining the company.

There were many Recruitment Strategies followed by the interviewees. A said that they don't look for Software Engineering knowledge but they hire from the Electronics Department as well. Whereas H targeted Bachelor degree holders from leading universities in telecommunication background and computer programming. They would also look at the final year projects and if already employed current working projects. K would also look at the curriculum vitae and the past history of the candidate. If a person has done different things, might take and train them.

L would look for the work related blogs and white papers of the potential candidates. A mentioned that they recruit island best undergraduates. In order to recruit a

balanced crowd, the strategy followed by I was recruit people who had done something innovative, batch tops and the best technically sound people in the batch. Another strategy by A was that they interview before the undergraduates pass out. C had a different approach. They highly market the R&D by doing final year project supervision, collaborate with universities, Masters sponsorships and project travel sponsoring. Training and supervision has an impact on recruitment. Sometimes people have joined C's organisation when they had been offered higher salaries at other places because they like what they do there. K's organization also supervised industry projects and collaborated with universities. If they saw potential in the candidate, they gave that person a job. Interviewee M also mentioned that they sponsored different universities for their innovative exhibitions and competitions. They also mentored students on how to market and select the right technology.

D's organization conducted tech sessions and shared knowledge in the universities. These incentives were tied up with recruitment. They also sponsored batch tops by means of rewards, recognition gold medals and monetary rewards. Interviewee F's approach was that they would assign graduates to challenging projects and provide room for innovation. If there were potential recruits who had done domain related, they tried to incorporate it. A strategy followed by J was to inject campus recruits to their passion if it is research related as they have two types of researches in the organization. Namely on going researches and new researches. So even after a few years if the employee decides to leave to pursue a Ph.D. it will not hamper day to day work. E's organization would demo concepts and gadgets to the universities to attract potential employees. Also give them to play around with the gadgets.

Interviewees A, C, D, E, J and K mentioned that their source for candidates from external recruitment was from educational institutions. Only 4 (A, B, D, F) interviewees considered person-job fit when considering selections. Interviewees B, M and N carried out work sample tests when conducting tests for selection of candidates. Here it requires the applicant to perform tasks that are actually a part of the work required on the job.

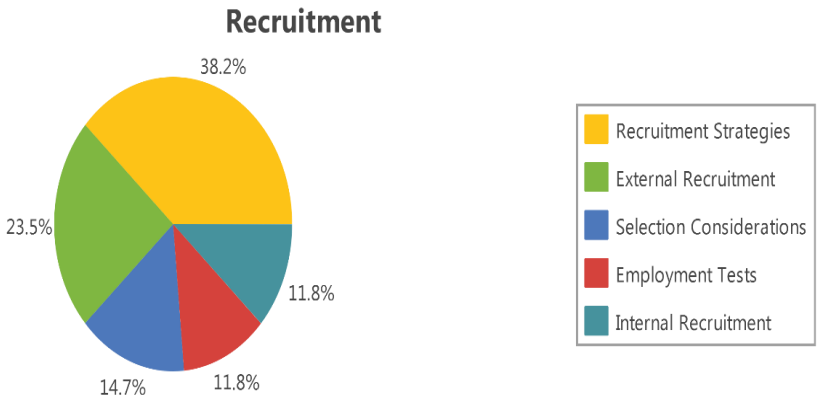


Figure 4.23: Pie chart – Recruitment

Figure 4.23 showed that overall 38.2% engaged in Recruitment Strategies to foster innovation while 23.5% used External Recruitment methods. It can infer from these figures that Recruitment Strategies played an important role to foster innovation.

Triangulating the findings with results from online press showed that organisations A,I,K and N have been ranked as Sri Lanka's best companies to work for 2015 by the Great Place to Work Institute in partnership with the LMD and Ceylon Chamber of Commerce. Organisation I and N were the gold winners at the HRM Awards 2014. Also, I received a special award in 2014 for talent management, and was recognised for talent management at Asia's Best Employer Brand Awards 2013 by the Great Place To Work Institute. Therefore, Recruitment is one of the key aspects of innovation management that influence the organisation of IT projects.

4.3.1.6 Relating the identified codes to the five trends of innovation management

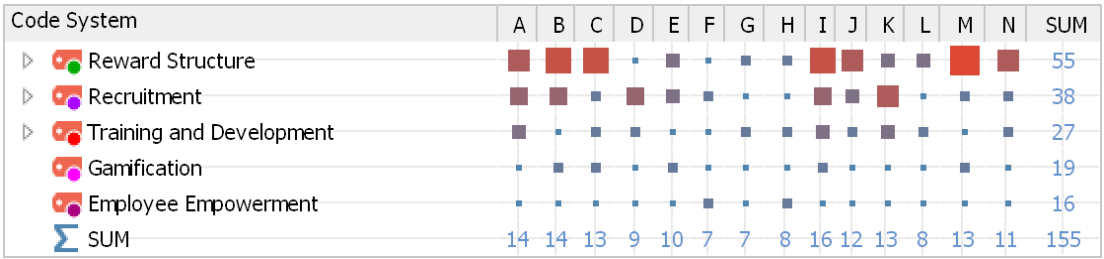


Figure 4.24: Code frequency per document – Overall

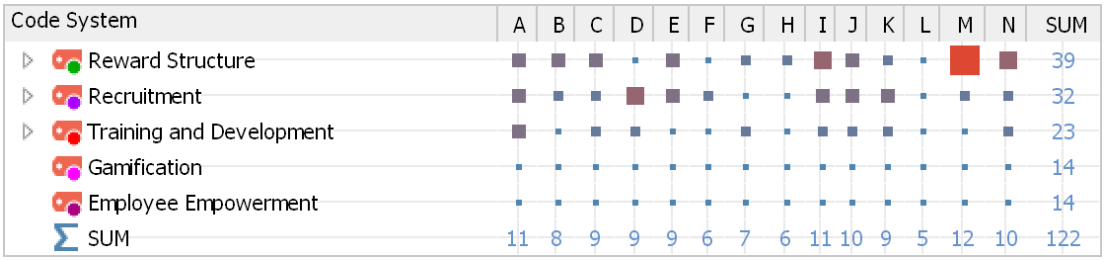


Figure 4.25: Number of documents per code – Overall

As show in Figure 4.24 and Figure 4.25, all codes have been related to the five trends of innovation management, with the highest density resulting for Reward Structure with 55 empirical groundings derived from 12 different codes. The second highest code was for Recruitment, with 38 groundings derived from 9 different codes. Training and Development received 27 groundings. Finally, Gamification and Employee Empowerment had only 19 and 16 empirical groundings respectively.

The overall ordering of the innovation management trends based on the code frequency per document and number of documents per code were as follows:

1. Reward Structure
2. Recruitment
3. Training and Development
4. Gamification
5. Employee Empowerment

4.3.2 For Different Innovation Management Methods, the Ordering of the Factors Which Influence the Organisation of IT Projects

4.3.2.1 Reward Structure

Team distribution

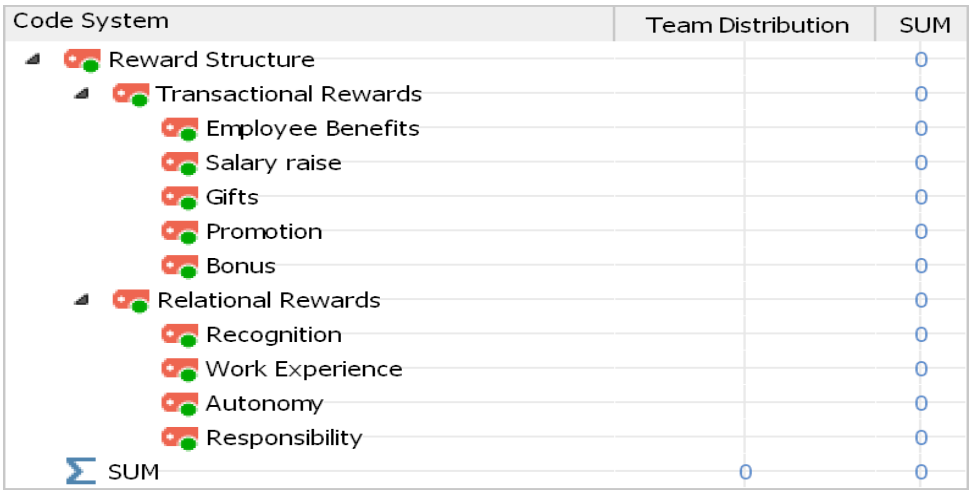


Figure 4.26: Total code relations of co-occurrence of codes between Reward Structure and Team Distribution

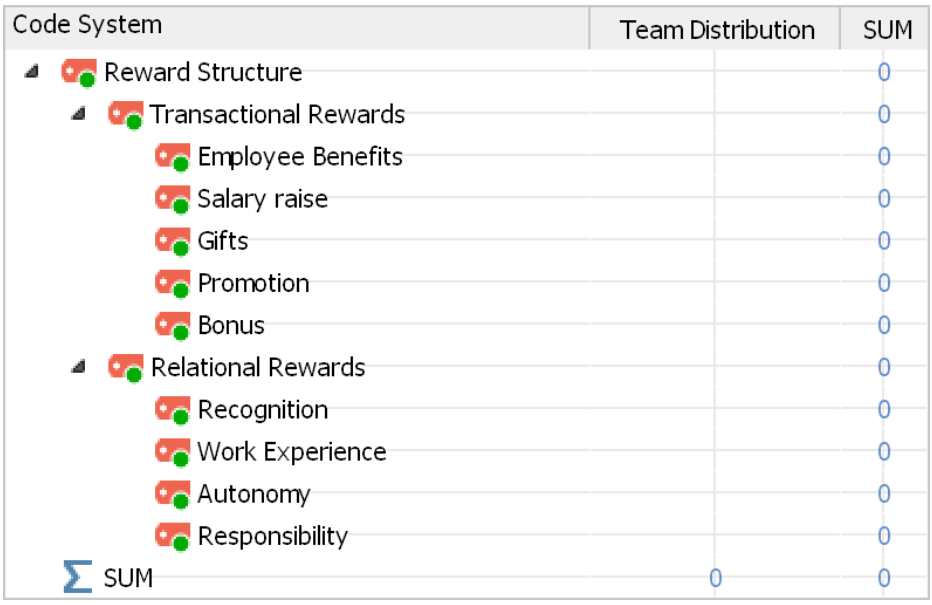


Figure 4.27: Number of documents per code relations of co-occurrence of codes between Reward Structure and Team Distribution

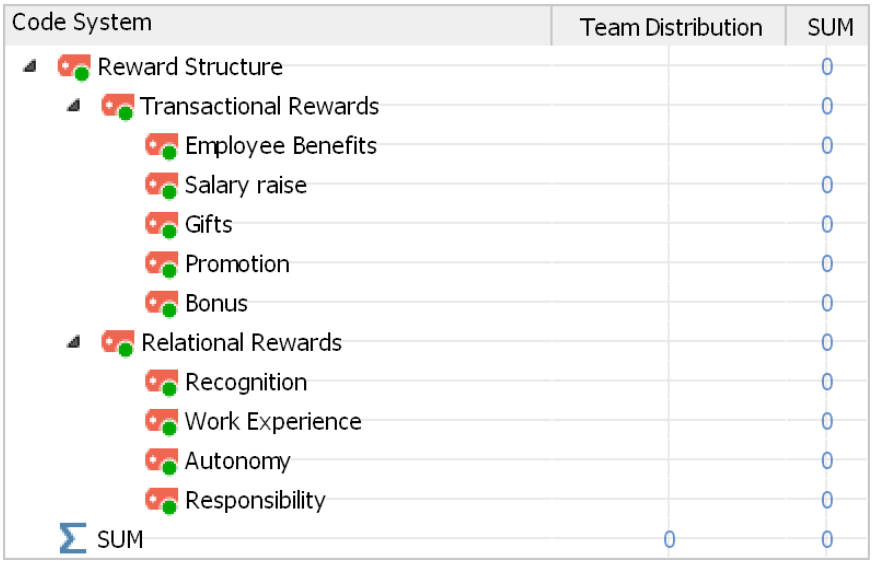


Figure 4.28: Total code relations of near codes between Reward Structure and Team Distribution

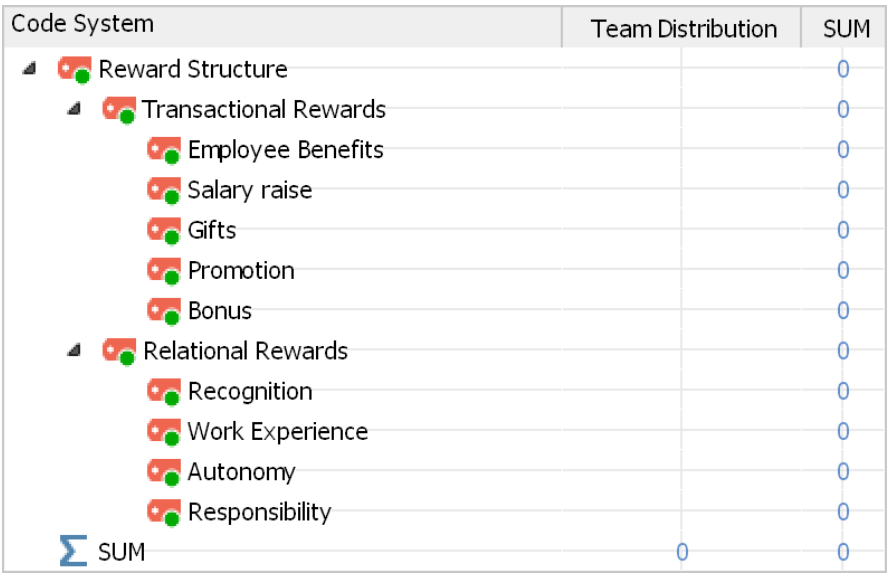


Figure 4.29: Number of documents per code relations of near codes between Reward Structure and Team Distribution

The Complex Coding Query feature with the following functions were used to retrieve code relations between Reward Structure and Team Distribution.

- If inside - Search for segments assigned to any one of the codes in Reward Structure that are also completely surrounded by a segment assigned to the code Team Distribution: 0 segments

- Followed by - Search for segments assigned to any one of the codes in Reward Structure that is followed by a segment assigned to the code Team Distribution within no more than 1 paragraph: 0 segments
- Near - Search for segments assigned to any one of the codes in Reward Structure that is preceded or followed by a segment assigned to the code Team Distribution within no more than 1 paragraph: 0 segments

The above results generated indicated that there were no code relations between Reward Structure and Team Distribution.

Support for innovation

Figure 4.30: Total code relations of co-occurrence of codes between Reward Structure and Management Support

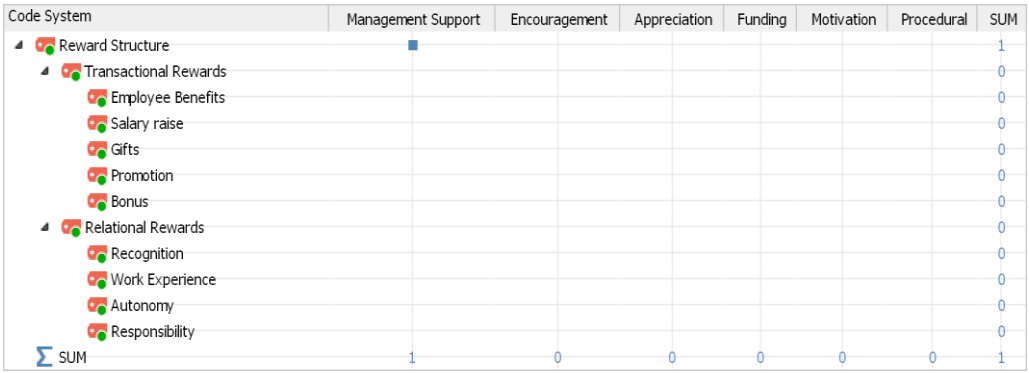


Figure 4.31: Number of documents per code relations of co-occurrence of codes between Reward Structure and Management Support

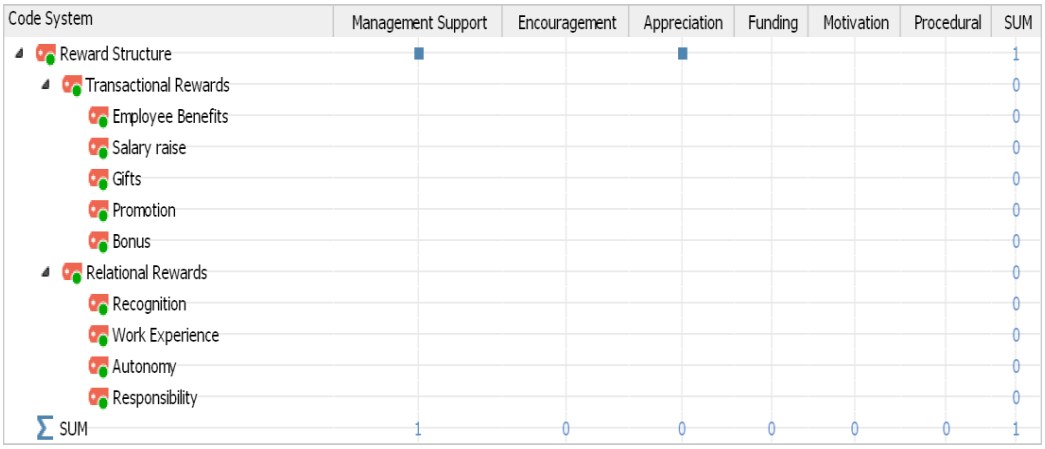


Figure 4.32: Total code relations of near codes between Reward Structure and Management Support

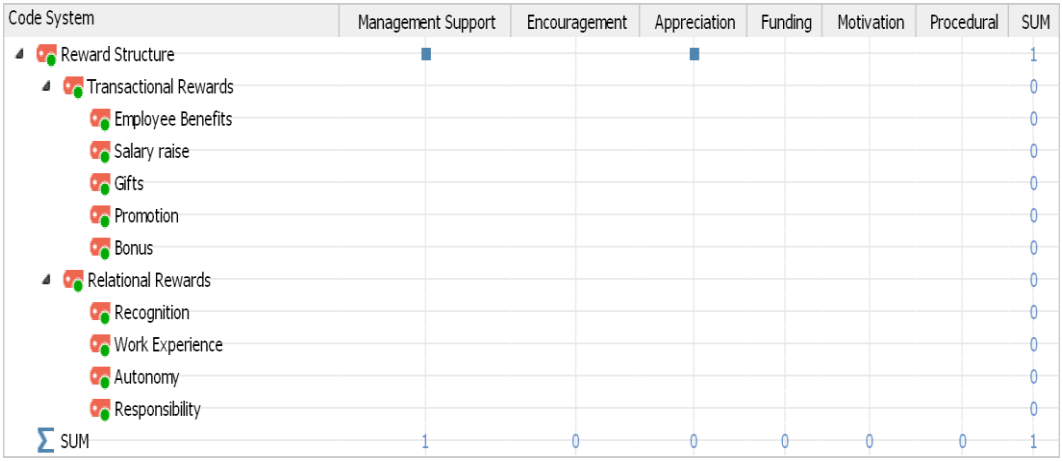


Figure 4.33: Number of documents per code relations of near codes between Reward Structure and Management Support

The Complex Coding Query feature with the following functions were used to retrieve code relations between Reward Structure and Management Support.

- If inside - Search for segments assigned to any one of the codes in Reward Structure that are also completely surrounded by a segment assigned to the code Management Support: 2 segments.
- Followed by - Search for segments assigned to any one of the codes in Reward Structure that is followed by a segment assigned to the code Management Support within no more than 1 paragraph: 3 segments

- Near - Search for segments assigned to any one of the codes in Reward Structure that is preceded or followed by a segment assigned to the code Management Support within no more than 1 paragraph: 3 segments

The above results generated indicated that there were code relations between Reward Structure and Management Support. Interviewee N mentioned that management supported by providing rewards, appreciating, fostering and inculcating the culture to reimagine and think differently.

Type of organisational structure

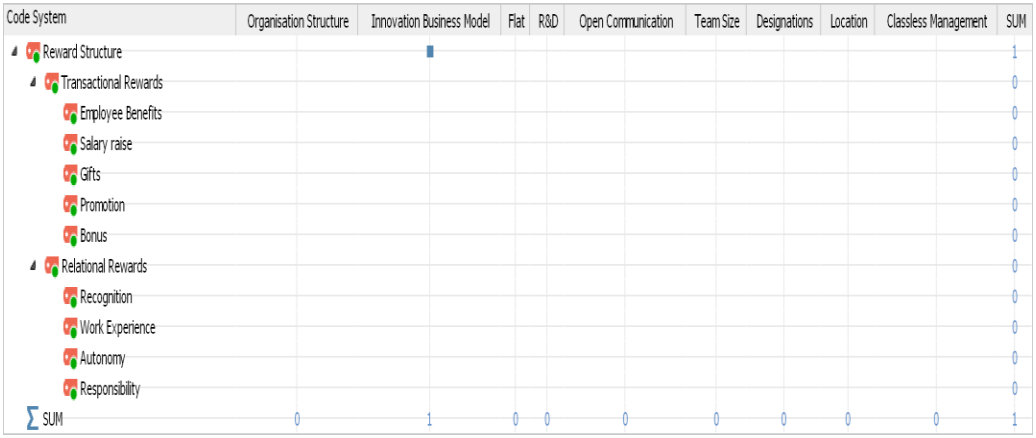


Figure 4.34: Total code relations of co-occurrence of codes between Reward Structure and Organisation Structure

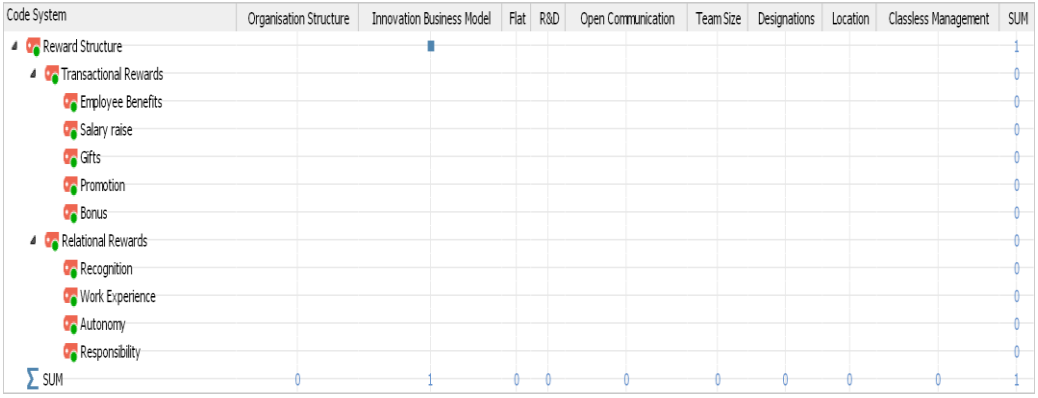


Figure 4.35: Number of documents per code relations of co-occurrence of codes between Reward Structure and Organisation Structure

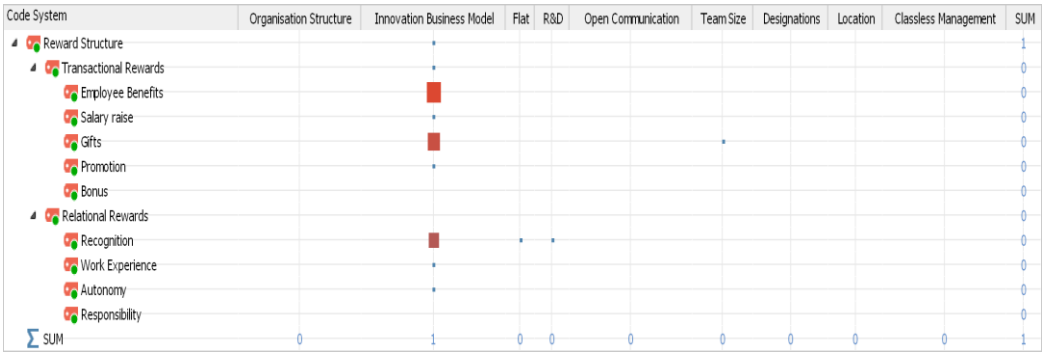


Figure 4.36: Total code relations of near codes between Reward Structure and Organisation Structure

Figure 4.37: Number of documents per code relations of near codes between Reward Structure and Organisation Structure

The Complex Coding Query feature with the following functions were used to retrieve code relations between Reward Structure and Organisation Structure.

- If inside - Search for segments assigned to any one of the codes in Reward Structure that are also completely surrounded by a segment assigned to the code Organisation Structure: 0 segments
- Followed by - Search for segments assigned to any one of the codes in Reward Structure that is followed by a segment assigned to the code Organisation Structure within no more than 1 paragraph: 30 segments

- Near - Search for segments assigned to any one of the codes in Reward Structure that is preceded or followed by a segment assigned to the code Organisation Structure within no more than 1 paragraph: 30 segments

The above results generated indicated that there were code relations between Reward Structure and Organisation Structure. Interviewee E mentioned that conducting innovation was a part of their business model. They would conduct innovation challenges and provide monetary rewards recognition for best ideas at the year end. They would also select employees to participate at conferences that are linked to the business. The selection is based on the performance of the employee and the interest area. More weight is given to the interest area. Interviewee I also had an innovation business model where they had a scheme to support sustainable innovation programmes. Through these programmes they would provide yearly innovation rewards, sponsorships to attend conferences, research publications and masters fee sponsorships. They identified that innovation happens when someone has a passion. But when it is a formal process you won't get the expected ROI. Business value should be there or else it is not sustainable.

Interviewee L had a flat structure. Through L's organisation structure quarterly and yearly innovation awards were awarded. Interviewee N described that opportunity is larger for services than product companies because they had a wide choice whereas product company's opportunities were domain related and narrowed. Their business model was services and the main driver was innovation. For each idea accepted by the team or client or a person cut down on the cost and effort of implementation the employees would get cash gifts. Through their internal system an innovator badge would be awarded to recognise someone whose idea is accepted by the client. N also mentioned that survival depends on quality and innovation.

Incentives for innovation

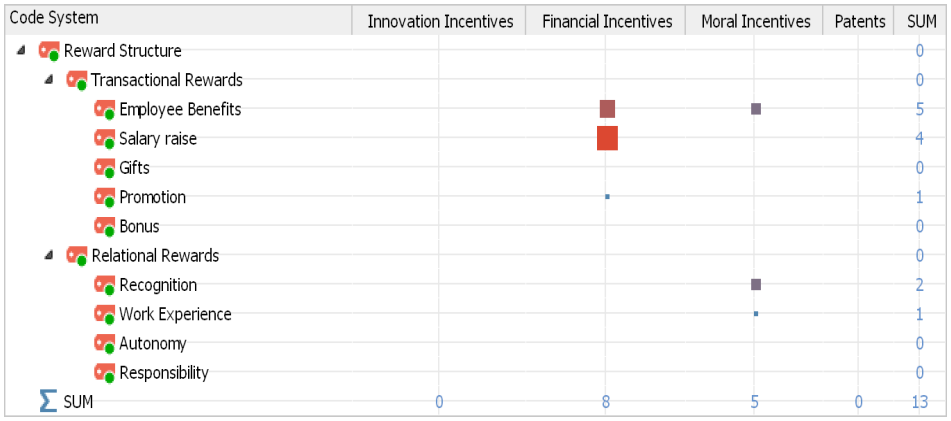


Figure 4.38: Total code relations of co-occurrence of codes between Reward Structure and Innovation Incentives

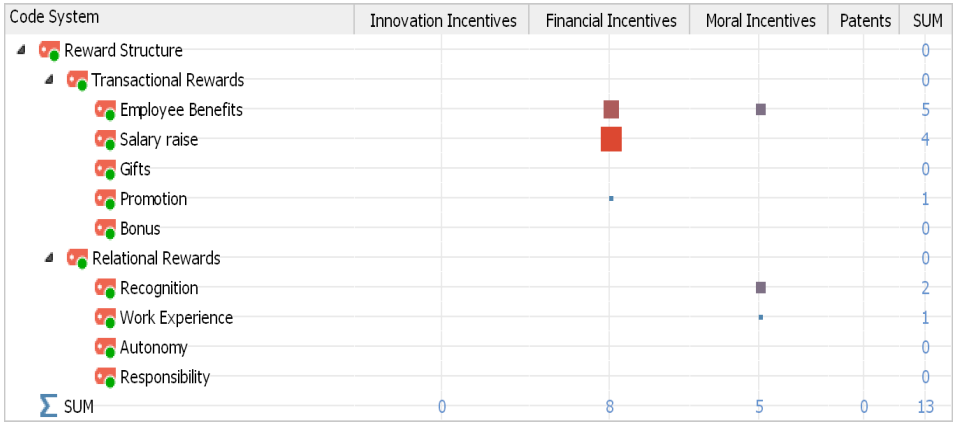


Figure 4.39: Number of documents per code relations of co-occurrence of codes between Reward Structure and Innovation Incentives

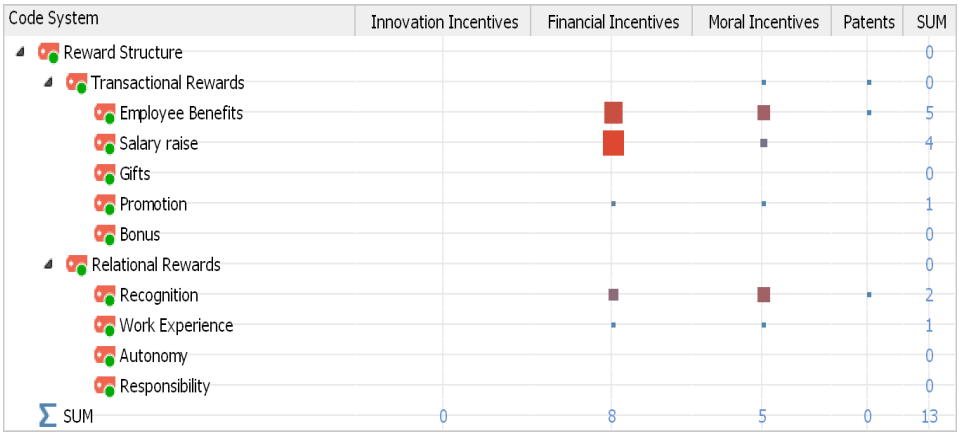


Figure 4.40: Total code relations of near codes between Reward Structure and Innovation Incentives

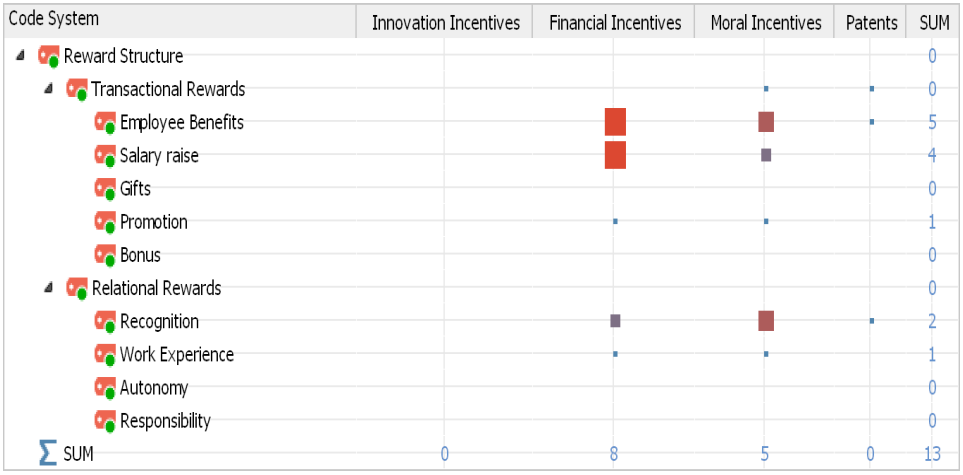


Figure 4.41: Number of documents per code relations of near codes between Reward Structure and Innovation Incentives

The Complex Coding Query feature with the following functions were used to retrieve code relations between Reward Structure and Innovation Incentives.

- If inside - Search for segments assigned to any one of the codes in Reward Structure that are also completely surrounded by a segment assigned to the code Innovation Incentives: 18 segments
- Followed by - Search for segments assigned to any one of the codes in Reward Structure that is followed by a segment assigned to the code Innovation Incentives within no more than 1 paragraph: 26 segments
- Near - Search for segments assigned to any one of the codes in Reward Structure that is preceded or followed by a segment assigned to the code Innovation Incentives within no more than 1 paragraph: 26 segments

The above results generated indicated that there were code relations between Reward Structure and Innovation Incentives.

Interviewee A, B, C, I, J and K provide financial incentives. Interviewee A, B, I, J and M provides moral incentives. Interviewee B, C and I provide salary raise. Interviewee B said they provide incentives for innovation such as yearly performance

ratings. They also give outstanding awards for major ideas found. Interviewee I also recognises their employees' innovation and support. C provides masters sponsorships and other courses. Interviewee J mentioned that they promote the employees to represent the company in training programs, forums and conferences. They also allow to work full time or part time in the research programme. Once a release is done the person can work for a week or two in the research project. Interviewee M said they provide support for technical white papers. This motivates employees. I and M's organisations have a budget for innovation. Financial incentive is considered as a transactional reward and a moral incentive is considered as a relational reward.

The overall ordering of factors which influence the organisation of IT projects for the innovation management method Reward Structures are as follows:

1. Organisation Structure
2. Innovation Incentives
3. Management Support

4.3.2.2 Recruitment

Team distribution

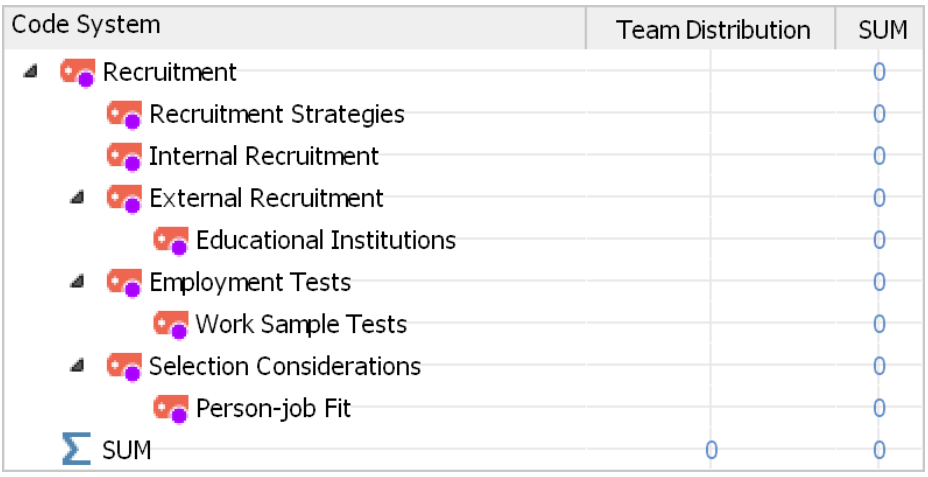


Figure 4.42: Total code relations of co-occurrence of codes between Recruitment and Team Distribution

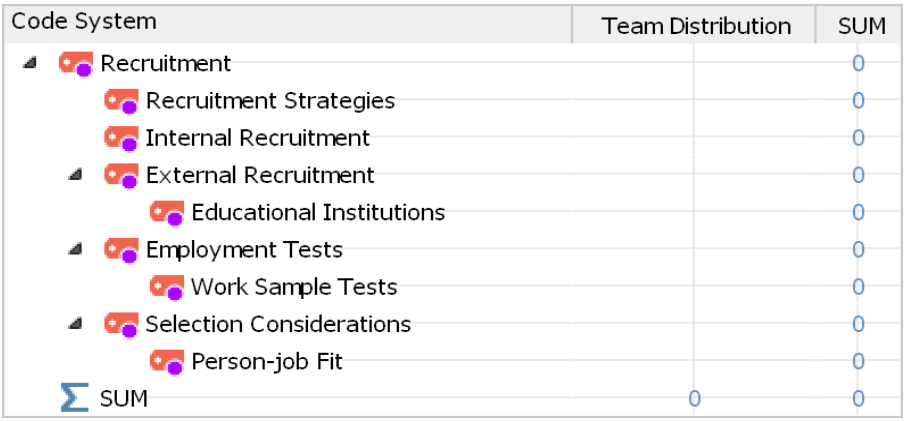


Figure 4.43: Number of documents per code relations of co-occurrence of codes between Recruitment and Team Distribution

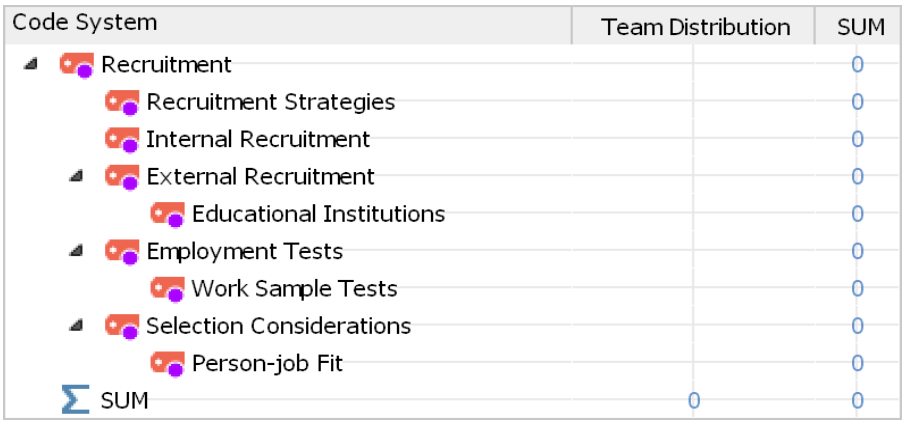


Figure 4.44: Total code relations of near codes between Recruitment and Team Distribution

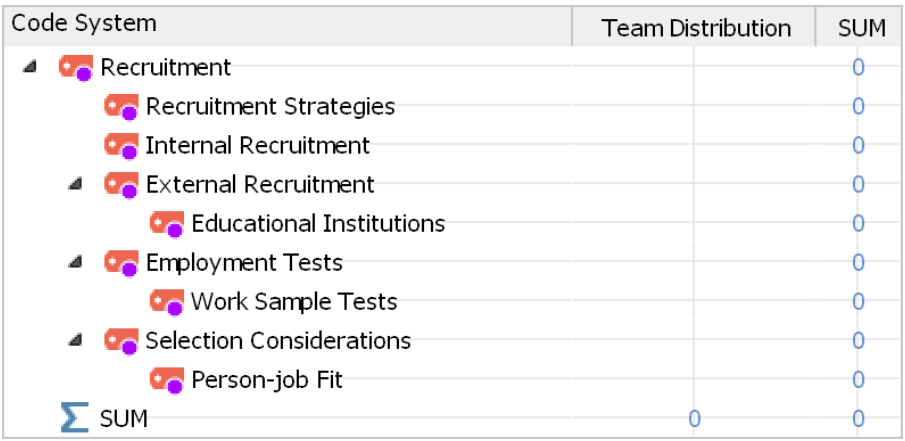


Figure 4.45: Number of documents per code relations of near codes between Recruitment and Team Distribution

The Complex Coding Query feature with the following functions were used to retrieve code relations between Recruitment and Team Distribution.

- If inside - Search for segments assigned to any one of the codes in Recruitment that are also completely surrounded by a segment assigned to the code Team Distribution: 0 segments
- Followed by - Search for segments assigned to any one of the codes in Recruitment that is followed by a segment assigned to the code Team Distribution within no more than 1 paragraph: 0 segments
- Near - Search for segments assigned to any one of the codes in Recruitment that is preceded or followed by a segment assigned to the code Team Distribution within no more than 1 paragraph: 0 segments

The above results generated indicated that there were no code relations between Recruitment and Team Distribution.

Support for innovation

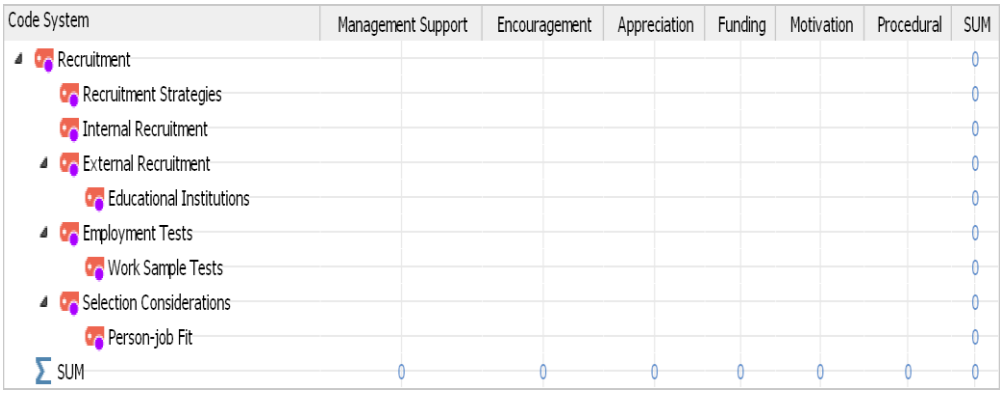


Figure 4.46: Total code relations of co-occurrence of codes between Recruitment and Management Support

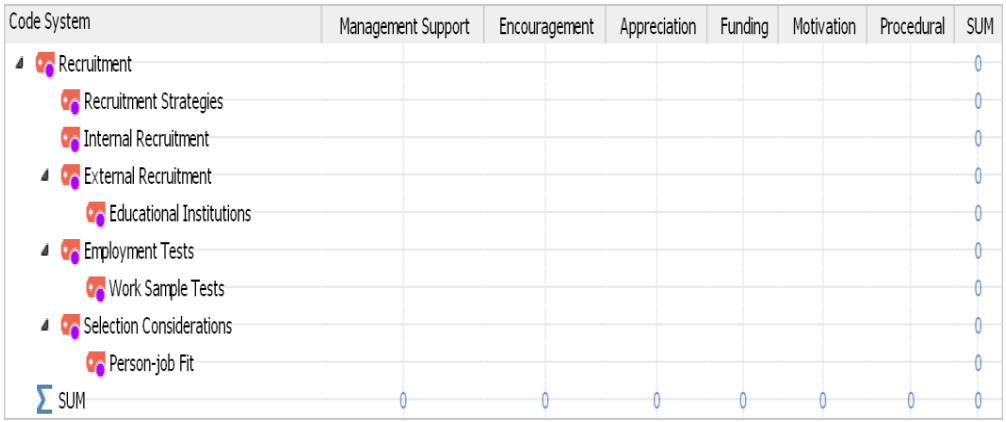


Figure 4.47: Number of documents per code relations of co-occurrence of codes between Recruitment and Management Support

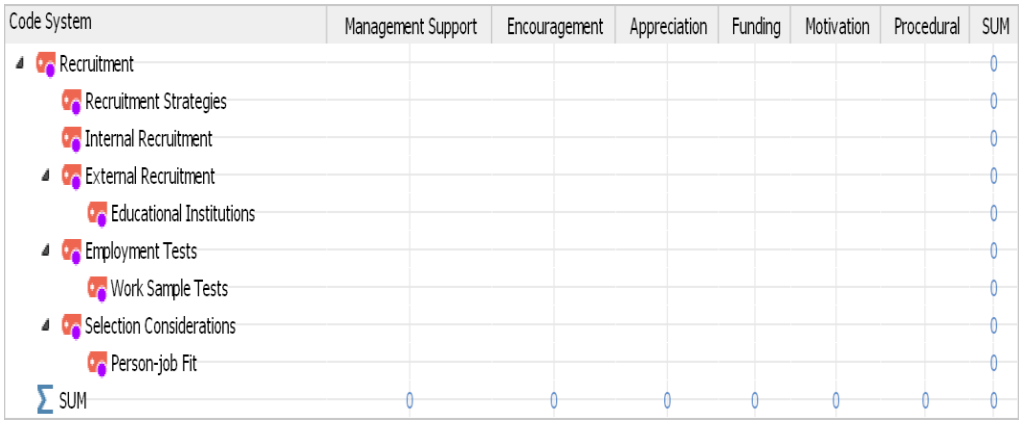


Figure 4.48: Total code relations of near codes between Recruitment and Management Support

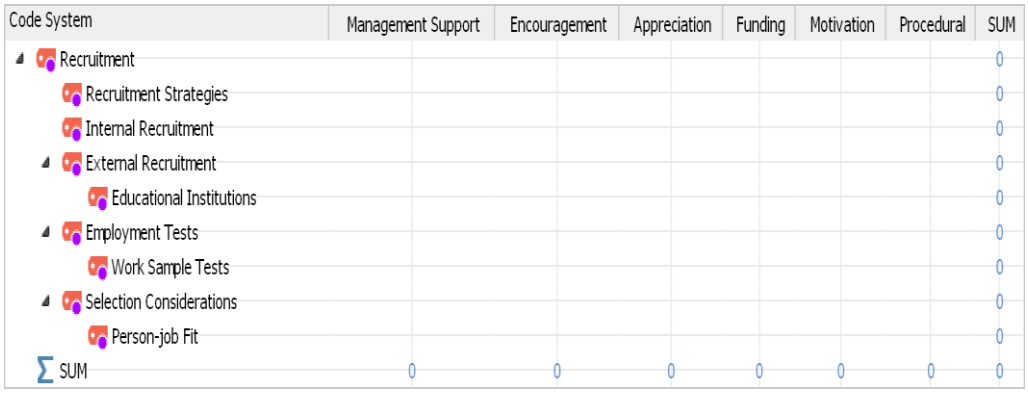


Figure 4.49: Number of documents per code relations of near codes between Recruitment and Management Support

The Complex Coding Query feature with the following functions were used to retrieve code relations between Recruitment and Management Support.

- If inside - Search for segments assigned to any one of the codes in Recruitment that are also completely surrounded by a segment assigned to the code Management Support: 0 segments
- Followed by - Search for segments assigned to any one of the codes in Recruitment that is followed by a segment assigned to the code Management Support within no more than 1 paragraph: 0 segments
- Near - Search for segments assigned to any one of the codes in Recruitment that is preceded or followed by a segment assigned to the code Management Support within no more than 1 paragraph: 0 segments

The above results generated indicated that there were no code relations between Recruitment and Management Support.

Type of organisational structure

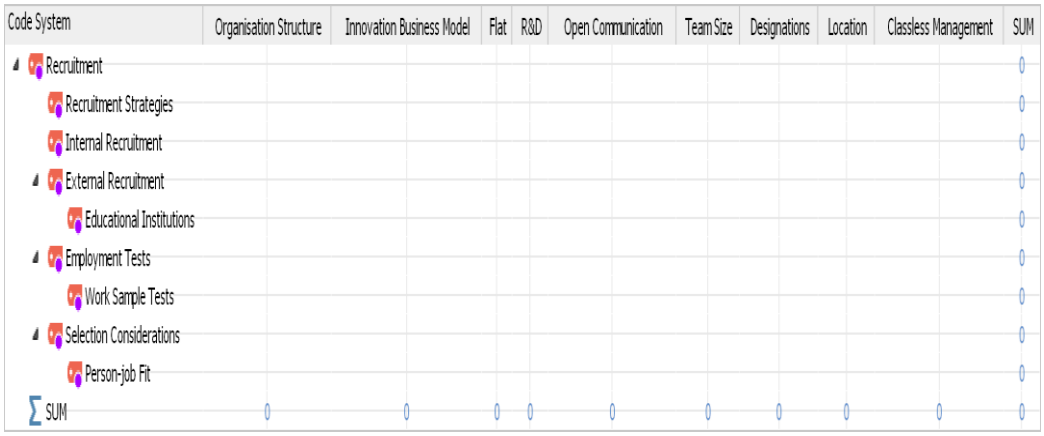


Figure 4.50: Total code relations of co-occurrence of codes between Recruitment and Organisation Structure

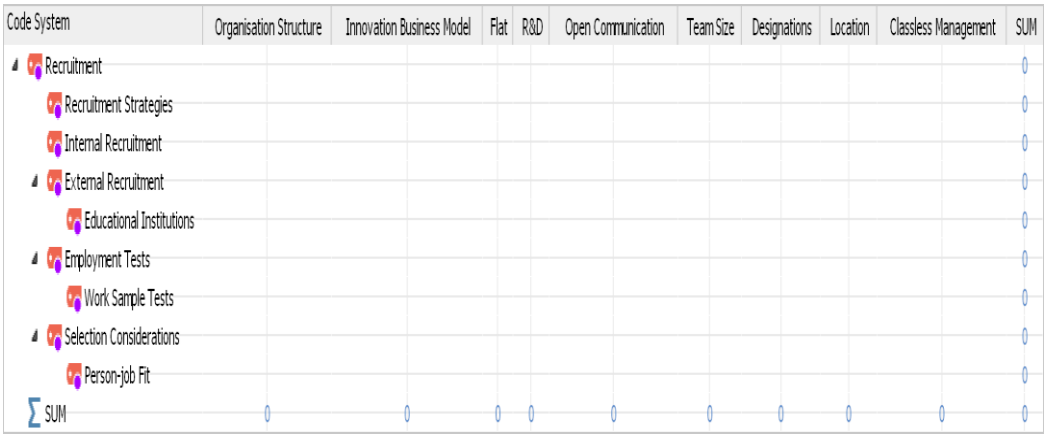


Figure 4.51: Number of documents per code relations of co-occurrence of codes between Recruitment and Organisation Structure

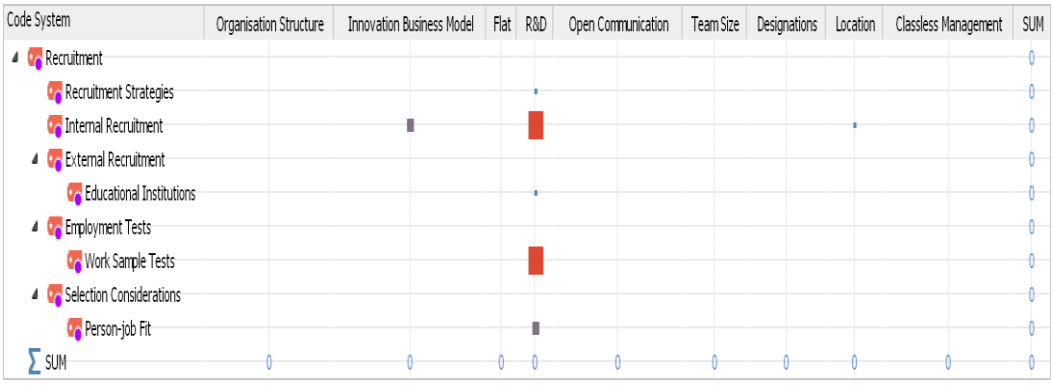


Figure 4.52: Total code relations of near codes between Recruitment and Organisation Structure

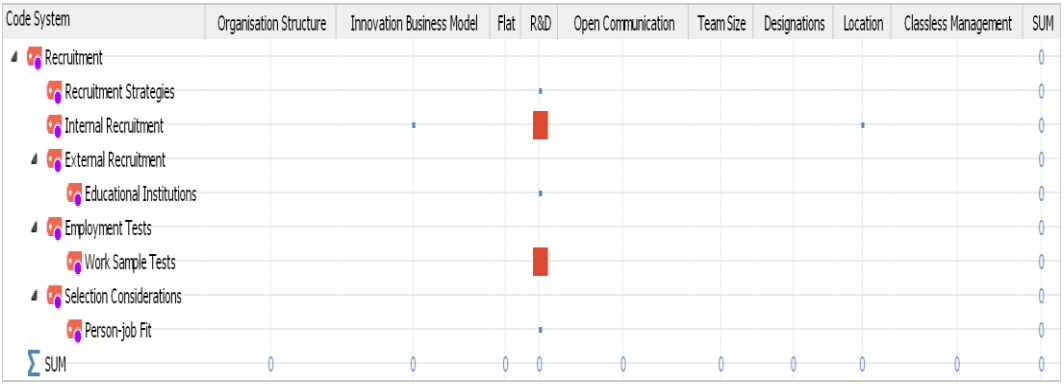


Figure 4.53: Number of documents per code relations of near codes between Recruitment and Organisation Structure

The Complex Coding Query feature with the following functions were used to retrieve code relations between Recruitment and Organisation Structure.

- If inside - Search for segments assigned to any one of the codes in Recruitment that are also completely surrounded by a segment assigned to the code Organisation Structure: 0 segments
- Followed by - Search for segments assigned to any one of the codes in Recruitment that is followed by a segment assigned to the code Organisation Structure within no more than 1 paragraph: 17 segments
- Near - Search for segments assigned to any one of the codes in Recruitment that is preceded or followed by a segment assigned to the code Organisation Structure within no more than 1 paragraph: 17 segments

The above results generated indicated that there were code relations between Recruitment and Organisation Structure.

In C's and J's organisation structure they have a separate R&D department. Interviewee C said they highly market the R&D by doing final year project supervision, collaborate with universities, providing masters sponsors and project travel sponsoring. C also mentioned that training and supervision has an impact on recruitment. Sometimes people have joined there when they had been offered higher salaries at other places because they liked what they do there.

In J's organisation the organisation structure allows people to move between layers. It is an outsourcing model. It is flexible. If someone in the research programme get recognition then be recruited internally for to another team, then knowledge transfers are carried out for existing people. It is on voluntary basis to be a part of the R&D. Employees need to be highly specialized and requires depth. Even interviewee N mentioned that an employee can request to join another internal team.

Incentives for innovation

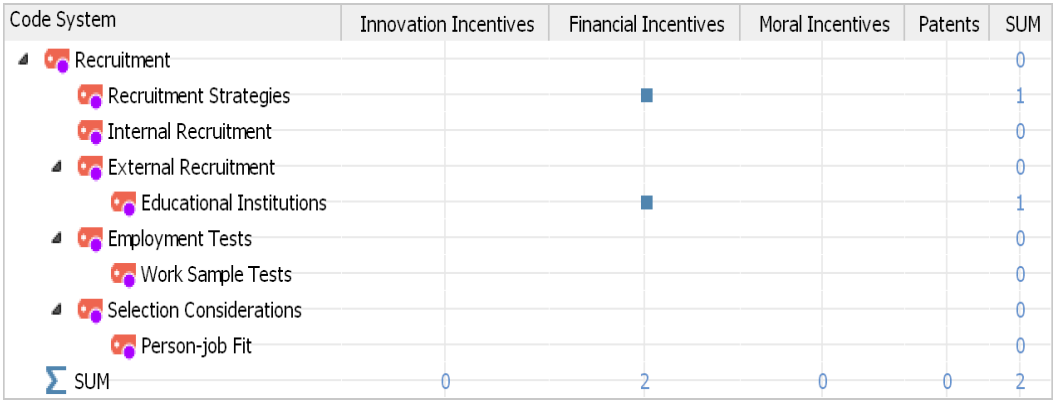


Figure 4.54: Total code relations of co-occurrence of codes between Recruitment and Innovation Incentives

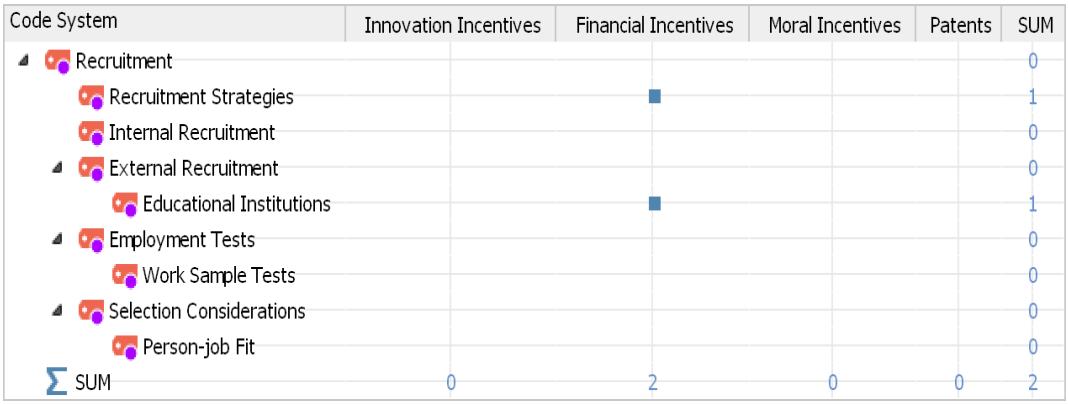


Figure 4.55: Number of documents per code relations of co-occurrence of codes between Recruitment and Innovation Incentives

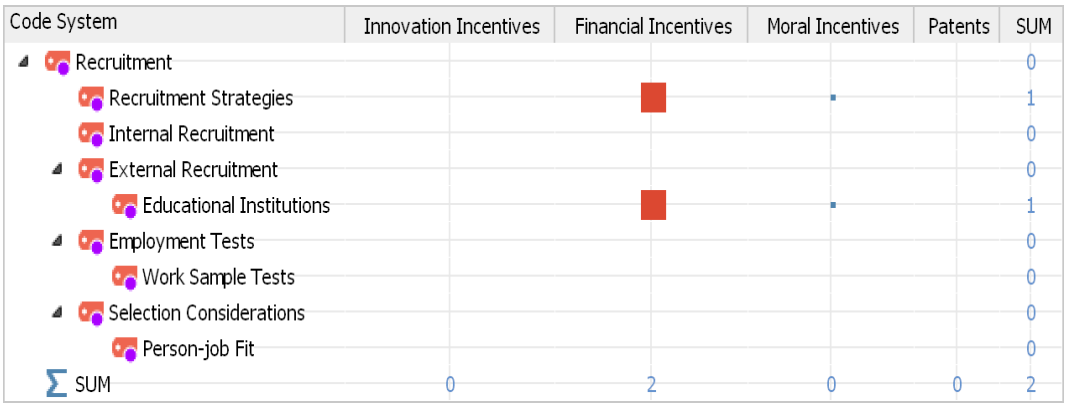


Figure 4.56: Total code relations of near codes between Recruitment and Innovation Incentives

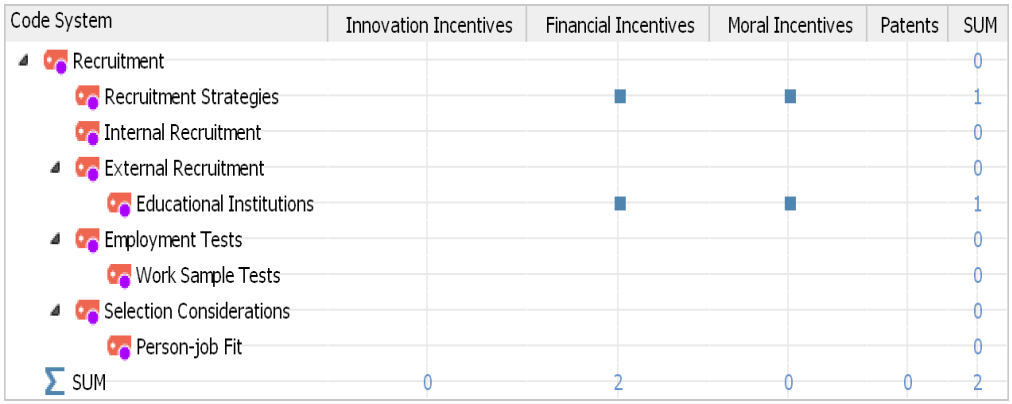


Figure 4.57: Number of documents per code relations of near codes between Recruitment and Innovation Incentives

The Complex Coding Query feature with the following functions were used to retrieve code relations between Recruitment and Innovation Incentives.

- If inside - Search for segments assigned to any one of the codes in Recruitment that are also completely surrounded by a segment assigned to the code Innovation Incentives: 3 segments
- Followed by - Search for segments assigned to any one of the codes in Recruitment that is followed by a segment assigned to the code Innovation Incentives within no more than 1 paragraph: 5 segments
- Near - Search for segments assigned to any one of the codes in Recruitment that is preceded or followed by a segment assigned to the code Innovation Incentives within no more than 1 paragraph: 5 segments

The above results generated indicated that there were code relations between Recruitment and Innovation Incentives. Interviewee D provided Financial Incentives. They sponsored conferences, industry visits and hackathons, conducted tech sessions and shared knowledge in the universities. These incentives were tied up with recruitment, which is one of their Recruitment Strategies. They also sponsored batch tops by means of rewards, recognition, gold medals and monetary rewards.

The overall ordering of factors which influence the organisation of IT projects for the innovation management method Recruitment are as follows:

1. Organisation Structure
2. Innovation Incentives

4.3.2.3 Training and Development

Team distribution

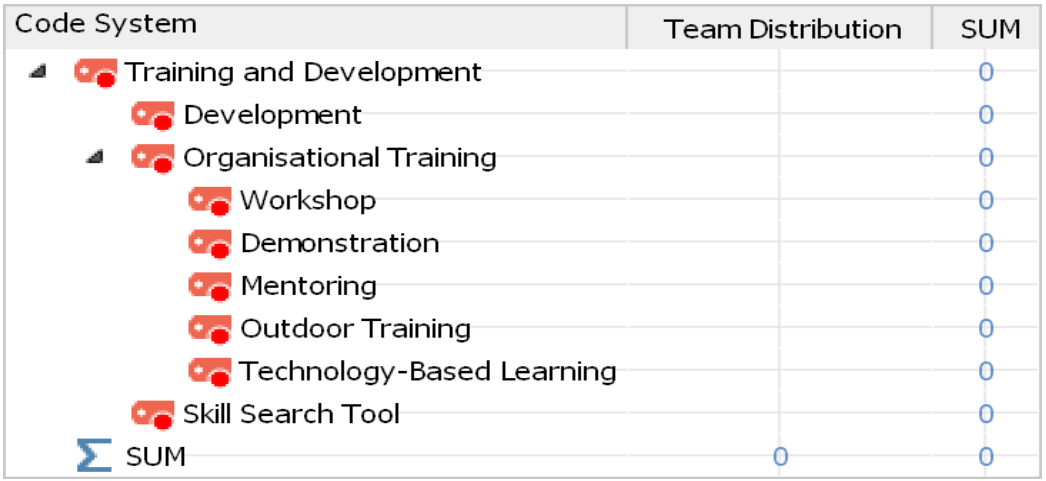


Figure 4.58: Total code relations of co-occurrence of codes between Training and Development and Team Distribution

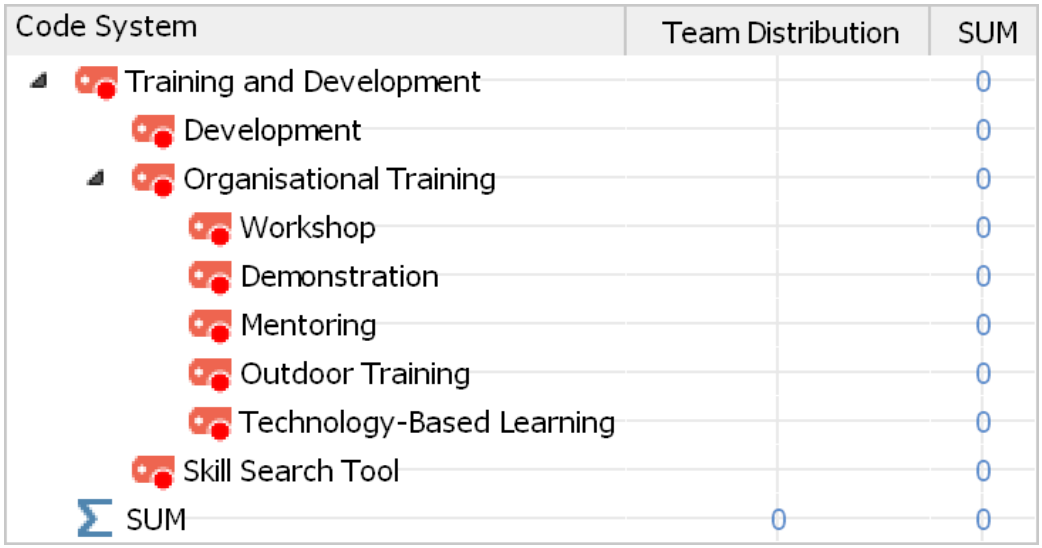


Figure 4.59: Number of documents per code relations of co-occurrence of codes between Training and Development and Team Distribution

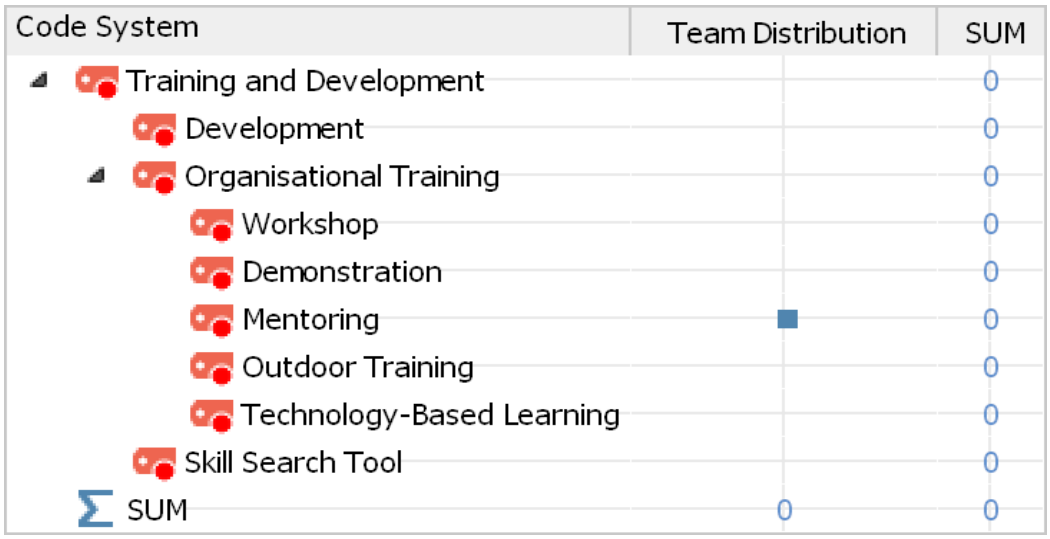


Figure 4.60: Total code relations of near codes between Training and Development and Team Distribution

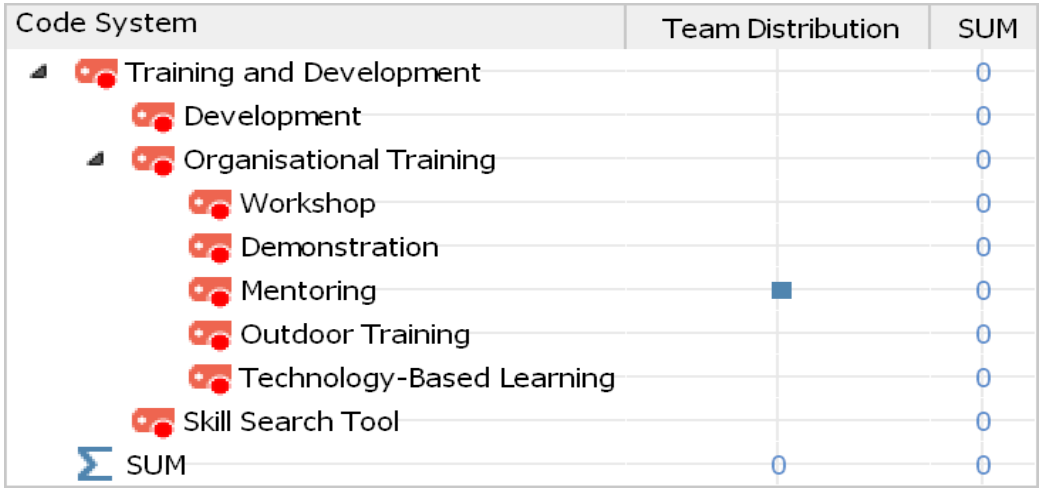


Figure 4.61: Number of documents per code relations of near codes between Training and Development and Team Distribution

The Complex Coding Query feature with the following functions were used to retrieve code relations between Training and Development and Team Distribution.

- If inside - Search for segments assigned to any one of the codes in Training and Development that are also completely surrounded by a segment assigned to the code Team Distribution: 0 segments

- Followed by - Search for segments assigned to any one of the codes in Training and Development that is followed by a segment assigned to the code Team Distribution within no more than 1 paragraph: 1 segment
- Near - Search for segments assigned to any one of the codes in Training and Development that is preceded or followed by a segment assigned to the code Team Distribution within no more than 1 paragraph: 1 segment

The above results generated indicated that there were code relations between Training and Development and Team Distribution. Interviewee J described that they foster innovation through team distribution by having mentoring programmes. J also mentioned that they have an innovative culture where each employee need to step up to the job role and career progression.

Support for innovation

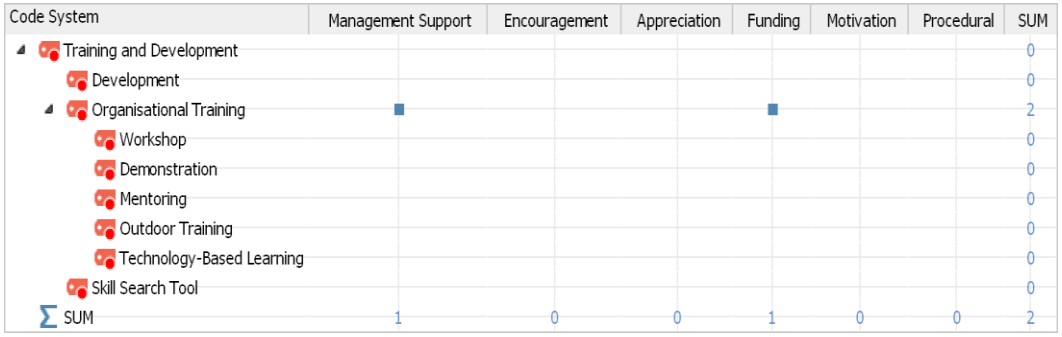


Figure 4.62: Total code relations of co-occurrence of codes between Training and Development and Management Support

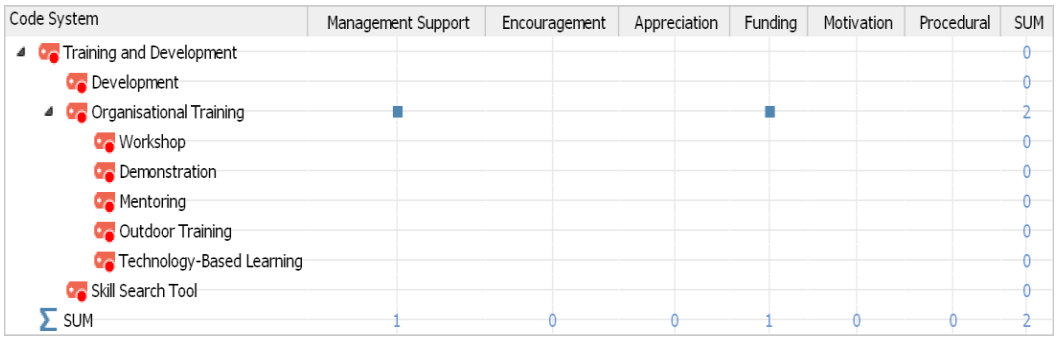


Figure 4.63: Number of documents per code relations of co-occurrence of codes between Training and Development and Management Support

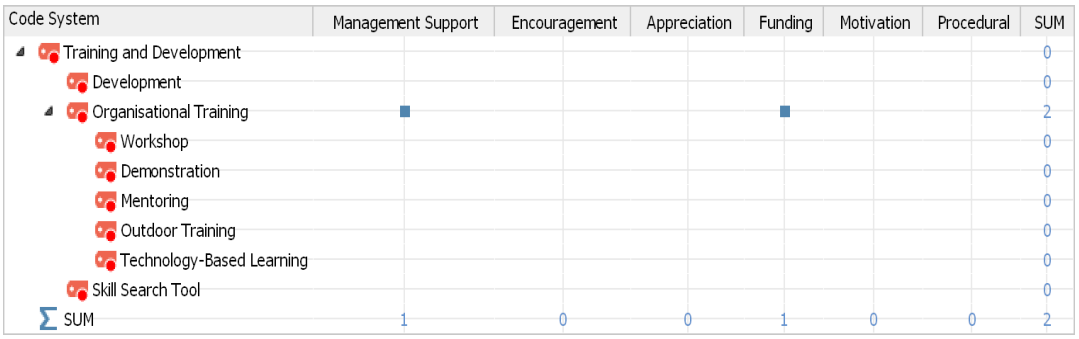


Figure 4.64: Total code relations of near codes between Training and Development and Management Support

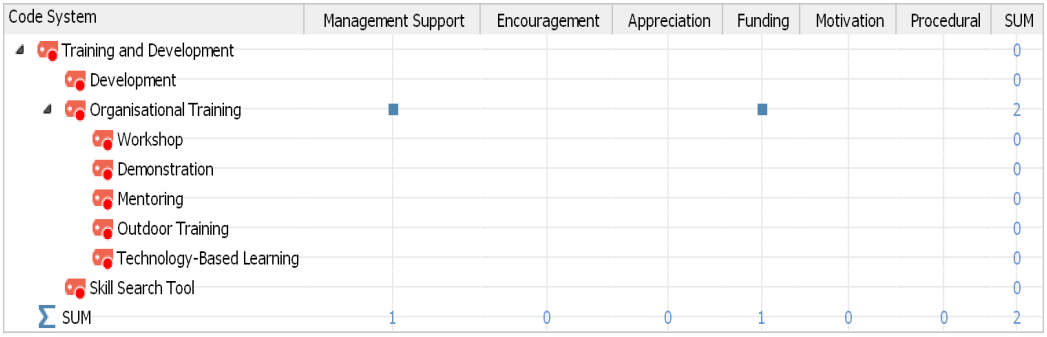


Figure 4.65: Number of documents per code relations of near codes between Training and Development and Management Support

The Complex Coding Query feature with the following functions were used to retrieve code relations between Training and Development and Management Support.

- If inside - Search for segments assigned to any one of the codes in Training and Development that are also completely surrounded by a segment assigned to the code Management Support: 1 segment
- Followed by - Search for segments assigned to any one of the codes in Training and Development that is followed by a segment assigned to the code Management Support within no more than 1 paragraph: 1 segment

- Near - Search for segments assigned to any one of the codes in Training and Development that is preceded or followed by a segment assigned to the code Management Support within no more than 1 paragraph: 1 segment

The above results generated indicated that there were code relations between Training and Development and Management Support. Interviewee D said that the management supported for innovation by providing necessary funds and trainings.

Type of organisational structure

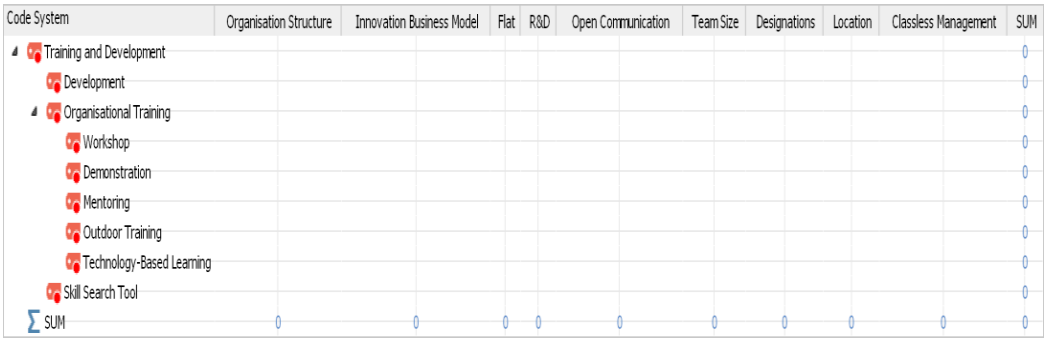


Figure 4.66: Total code relations of co-occurrence of codes between Training and Development and Organisation Structure

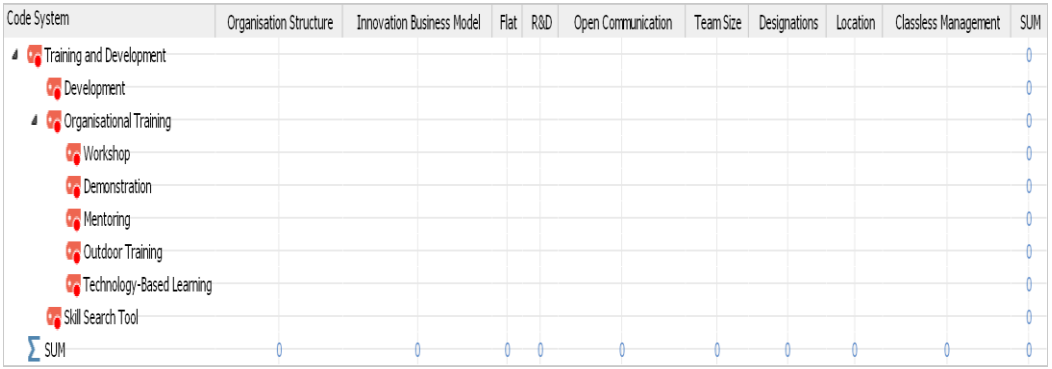


Figure 4.67: Number of documents per code relations of co-occurrence of codes between Training and Development and Organisation Structure

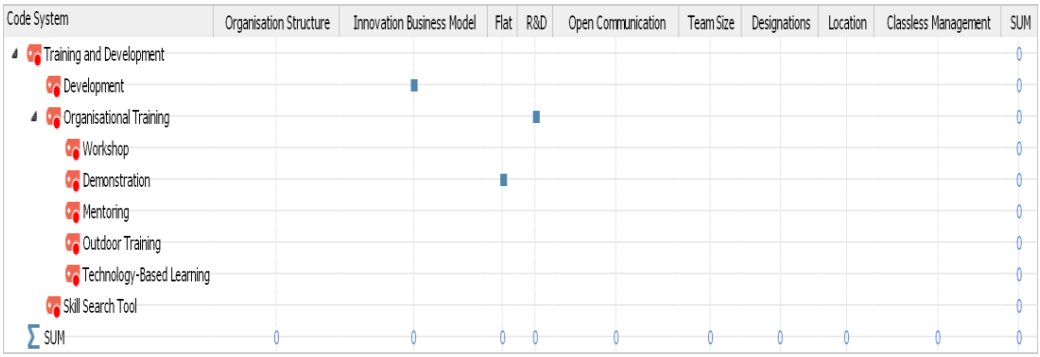


Figure 4.68: Total code relations of near codes between Training and Development and Organisation Structure

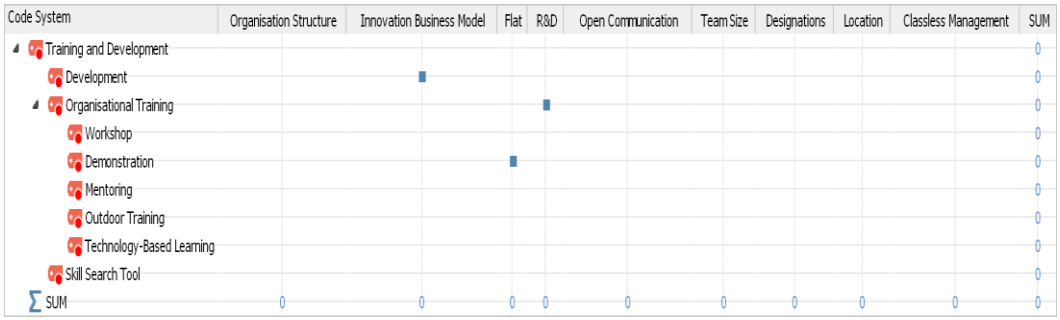


Figure 4.69: Number of documents per code relations of near codes between Training and Development and Organisation Structure

The Complex Coding Query feature with the following functions were used to retrieve code relations between Training and Development and Organisation Structure.

- If inside - Search for segments assigned to any one of the codes in Training and Development that are also completely surrounded by a segment assigned to the code Organisation Structure: 0 segments
- Followed by - Search for segments assigned to any one of the codes in Training and Development that is followed by a segment assigned to the code Organisation Structure within no more than 1 paragraph: 6 segments

- Near - Search for segments assigned to any one of the codes in Training and Development that is preceded or followed by a segment assigned to the code Organisation Structure within no more than 1 paragraph: 6 segments

The above results generated indicated that there were code relations between Training and Development and Organisation Structure. Interviewee L mentioned that they have a flat structure in their organisation. They encourage innovation through their organisation structure by having weekly innovation sessions.

Incentives for innovation

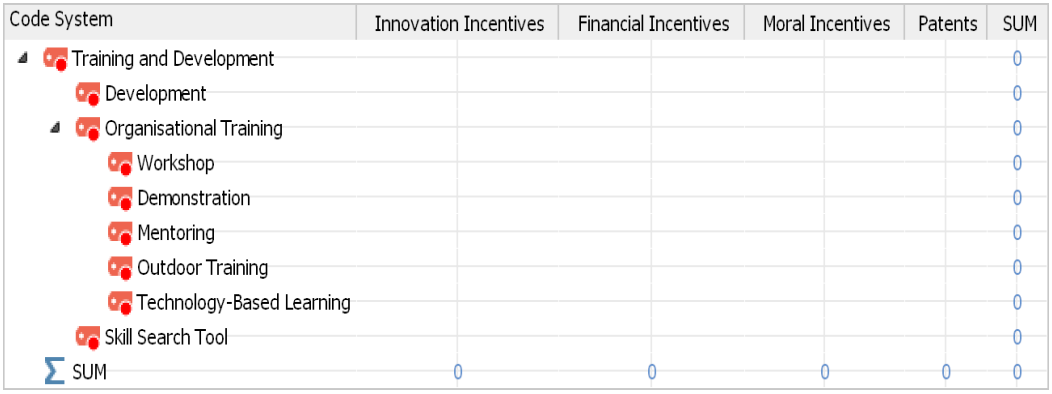


Figure 4.70: Total code relations of co-occurrence of codes between Training and Development and Innovation Incentives

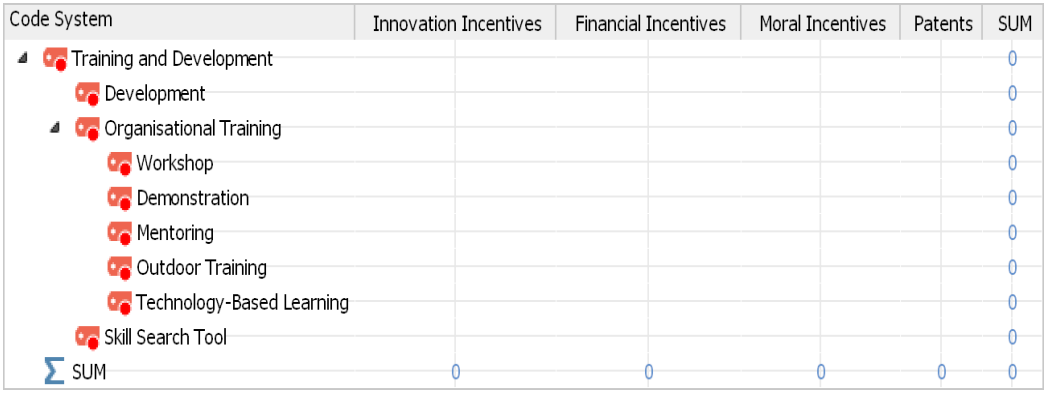


Figure 4.71: Number of documents per code relations of co-occurrence of codes between Training and Development and Innovation Incentives

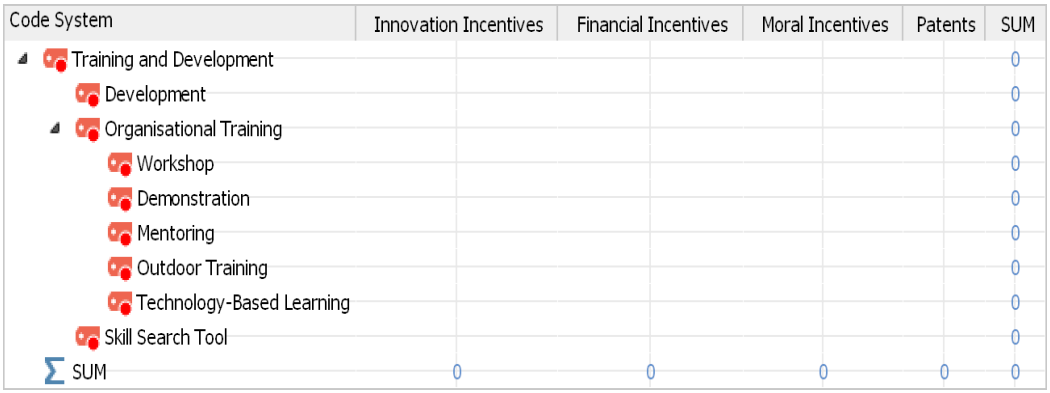


Figure 4.72: Total code relations of near codes between Training and Development and Innovation Incentives

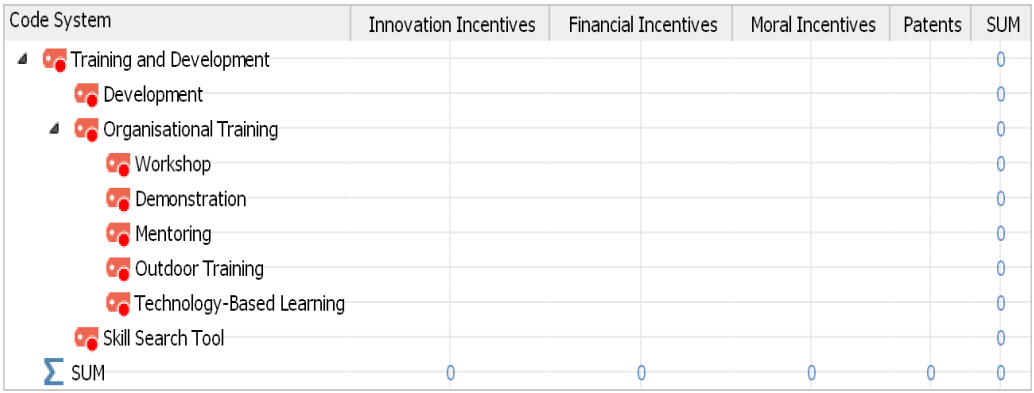


Figure 4.73: Number of documents per code relations of near codes between Training and Development and Innovation Incentives

The Complex Coding Query feature with the following functions were used to retrieve code relations between Training and Development and Innovation Incentives.

- If inside - Search for segments assigned to any one of the codes in Training and Development that are also completely surrounded by a segment assigned to the code Innovation Incentives: 0 segments
- Followed by - Search for segments assigned to any one of the codes in Training and Development that is followed by a segment assigned to the code Innovation Incentives within no more than 1 paragraph: 0 segments

- Near - Search for segments assigned to any one of the codes in Training and Development that is preceded or followed by a segment assigned to the code Innovation Incentives within no more than 1 paragraph: 0 segments

The above results generated indicated that there were no code relations between Training and Development and Innovation Incentives. The overall ordering of factors which influence the organisation of IT projects for the innovation management method Training and Development are as follows:

Team Distribution, Management Support and Organisation Structure were at the same level.

4.3.2.4 Gamification

Team distribution

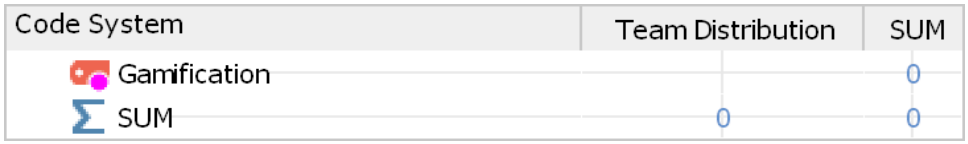


Figure 4.74: Total code relations of co-occurrence of codes between Gamification and Team Distribution

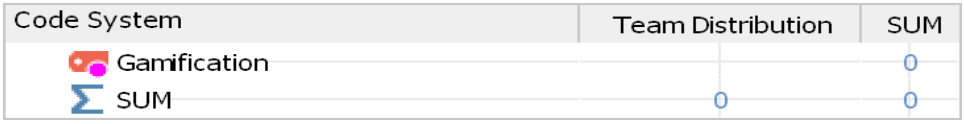


Figure 4.75: Number of documents per code relations of co-occurrence of codes between Gamification and Team Distribution

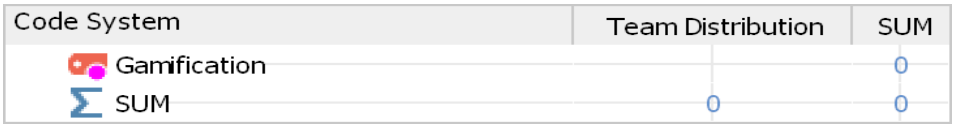


Figure 4.76: Total code relations of near codes between Gamification and Team Distribution

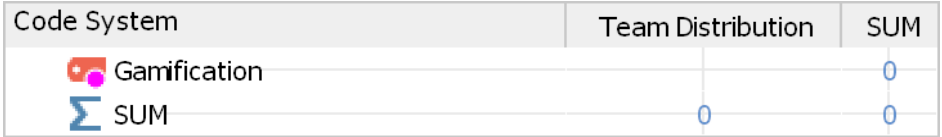


Figure 4.77: Number of documents per code relations of near codes between Gamification and Team Distribution

The Complex Coding Query feature with the following functions were used to retrieve code relations between Gamification and Team Distribution.

- If inside - Search for segments assigned to any one of the codes in Gamification that are also completely surrounded by a segment assigned to the code Team Distribution: 0 segments
- Followed by - Search for segments assigned to any one of the codes in Gamification that is followed by a segment assigned to the code Team Distribution within no more than 1 paragraph: 0 segments
- Near - Search for segments assigned to any one of the codes in Gamification that is preceded or followed by a segment assigned to the code Team Distribution within no more than 1 paragraph: 0 segments

The above results generated indicated that there were no code relations between Gamification and Team Distribution.

Support for innovation

Figure 4.78: Total code relations of co-occurrence of codes between Gamification and Management Support

Figure 4.79: Number of documents per code relations of co-occurrence of codes between Gamification and Management Support

Figure 4.80: Total code relations of near codes between Gamification and Management Support

Figure 4.81: Number of documents per code relations of near codes between Gamification and Management Support

The Complex Coding Query feature with the following functions were used to retrieve code relations between Gamification and Management Support.

- If inside - Search for segments assigned to any one of the codes in Gamification that are also completely surrounded by a segment assigned to the code Management Support: 0 segments
- Followed by - Search for segments assigned to any one of the codes in Gamification that is followed by a segment assigned to the code Management Support within no more than 1 paragraph: 0 segments
- Near - Search for segments assigned to any one of the codes in Gamification that is preceded or followed by a segment assigned to the code Management Support within no more than 1 paragraph: 0 segments

The above results generated indicated that there were no code relations between Gamification and Management Support.

Type of organisational structure

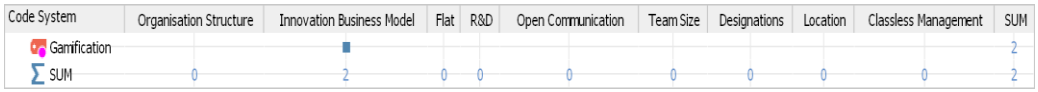


Figure 4.82: Total code relations of co-occurrence of codes between Gamification and Organisation Structure

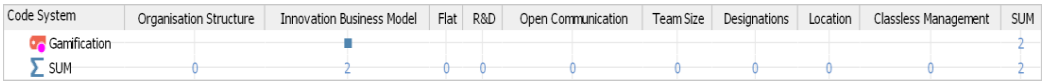


Figure 4.83: Number of documents per code relations of co-occurrence of codes between Gamification and Organisation Structure

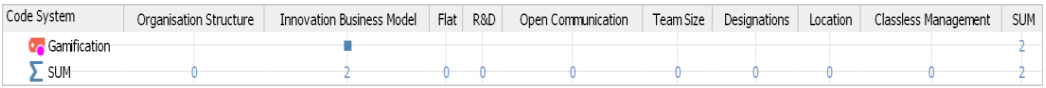


Figure 4.84: Total code relations of near codes between Gamification and Organisation Structure

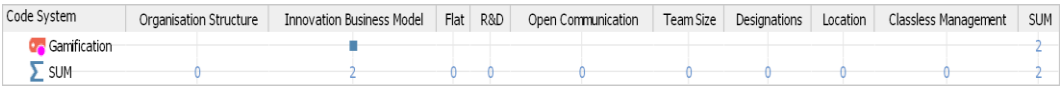


Figure 4.85: Number of documents per code relations of near codes between Gamification and Organisation Structure

The Complex Coding Query feature with the following functions were used to retrieve code relations between Gamification and Organisation Structure.

- If inside - Search for segments assigned to any one of the codes in Gamification that are also completely surrounded by a segment assigned to the code Organisation Structure: 0 segments
- Followed by - Search for segments assigned to any one of the codes in Gamification that is followed by a segment assigned to the code Organisation Structure within no more than 1 paragraph: 7 segments
- Near - Search for segments assigned to any one of the codes in Gamification that is preceded or followed by a segment assigned to the code Organisation Structure within no more than 1 paragraph: 7 segments

The above results generated indicated that there were code relations between Gamification and Organisation Structure.

Interviewee C said that ideas were based mainly on innovation and these ideas were within the employees and not available in the market. This is the business model followed at C's organisation. In order to bring those ideas out, they have competitions to come up with innovative ideas. Conducting innovation is a part of E's business model. They also carryout innovative challenges. Competitions for teams as well as individuals. Even I had tried this model. The lessons learnt from this model for I was that a formal innovation process will not get the expected ROI. In the future in order to foster innovation not to formalize but drive it with keeping in mind that innovation happens when someone has a passion.

Incentives for innovation

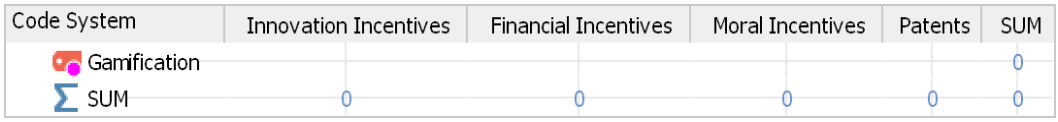


Figure 4.86: Total code relations of co-occurrence of codes between Gamification and Innovation Incentives

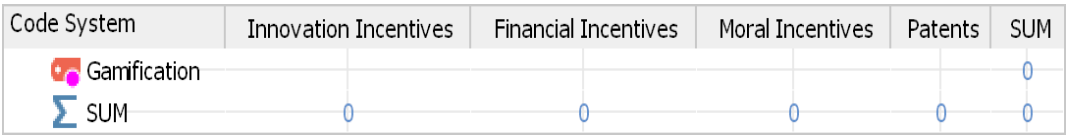


Figure 4.87: Number of documents per code relations of co-occurrence of codes between Gamification and Innovation Incentives

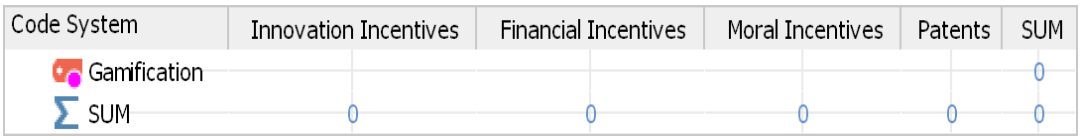


Figure 4.88: Total code relations of near codes between Gamification and Innovation Incentives

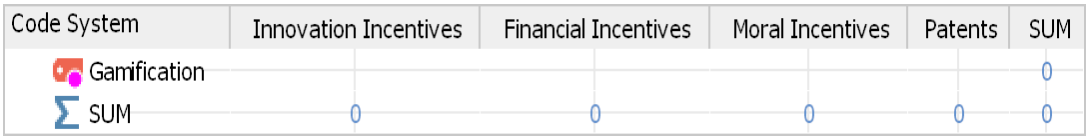


Figure 4.89: Number of documents per code relations of near codes between Gamification and Innovation Incentives

The Complex Coding Query feature with the following functions were used to retrieve code relations between Gamification and Innovation Incentives.

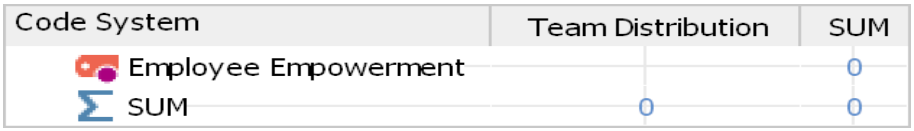
- If inside - Search for segments assigned to any one of the codes in Gamification that are also completely surrounded by a segment assigned to the code Innovation Incentives: 0 segments
- Followed by - Search for segments assigned to any one of the codes in Gamification that is followed by a segment assigned to the code Innovation Incentives within no more than 1 paragraph: 0 segments
- Near - Search for segments assigned to any one of the codes in Gamification that is preceded or followed by a segment assigned to the code Innovation Incentives within no more than 1 paragraph: 0 segments

The above results generated indicated that there were no code relations between Gamification and Innovation Incentives.

Only Organisation Structure influenced the organisation of IT projects for the innovation management method Gamification.

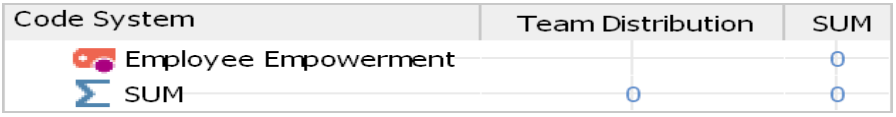
4.3.2.5 Employee Empowerment

Team distribution



Code System	Team Distribution	SUM
Employee Empowerment		0
SUM	0	0

Figure 4.90: Total code relations of co-occurrence of codes between Employee Empowerment and Team Distribution



Code System	Team Distribution	SUM
Employee Empowerment		0
SUM	0	0

Figure 4.91: Number of documents per code relations of co-occurrence of codes between Employee Empowerment and Team Distribution

Code System	Team Distribution	SUM
Employee Empowerment		0
SUM	0	0

Figure 4.92: Total code relations of near codes between Employee Empowerment and Team Distribution

Code System	Team Distribution	SUM
Employee Empowerment		0
SUM	0	0

Figure 4.93: Number of documents per code relations of near codes between Employee Empowerment and Team Distribution

The Complex Coding Query feature with the following functions were used to retrieve code relations between Employee Empowerment and Team Distribution.

- If inside - Search for segments assigned to any one of the codes in Employee Empowerment that are also completely surrounded by a segment assigned to the code Team Distribution: 0 segments
- Followed by - Search for segments assigned to any one of the codes in Employee Empowerment that is followed by a segment assigned to the code Team Distribution within no more than 1 paragraph: 0 segments

- Near - Search for segments assigned to any one of the codes in Employee Empowerment that is preceded or followed by a segment assigned to the code Team Distribution within no more than 1 paragraph: 0 segments

The above results generated indicated that there were no code relations between Employee Empowerment and Team Distribution.

Support for innovation

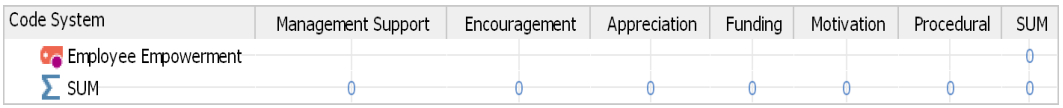


Figure 4.94: Total code relations of co-occurrence of codes between Employee Empowerment and Management Support

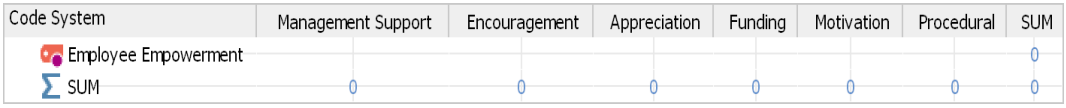


Figure 4.95: Number of documents per code relations of co-occurrence of codes between Employee Empowerment and Management Support

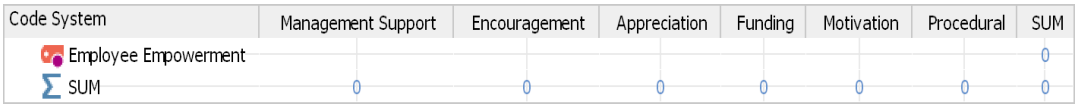


Figure 4.96: Total code relations of near codes between Employee Empowerment and Management Support

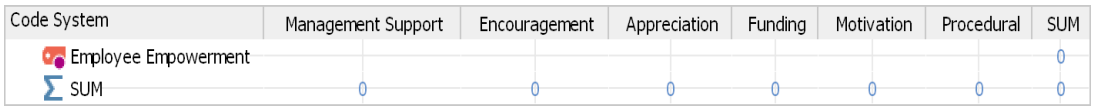


Figure 4.97: Number of documents per code relations of near codes between Employee Empowerment and Management Support

The Complex Coding Query feature with the following functions were used to retrieve code relations between Employee Empowerment and Management Support.

- If inside - Search for segments assigned to any one of the codes in Employee Empowerment that are also completely surrounded by a segment assigned to the code Management Support: 0 segments

- Followed by - Search for segments assigned to any one of the codes in Employee Empowerment that is followed by a segment assigned to the code Management Support within no more than 1 paragraph: 0 segments
- Near - Search for segments assigned to any one of the codes in Employee Empowerment that is preceded or followed by a segment assigned to the code Management Support within no more than 1 paragraph: 0 segments

The above results generated indicated that there were no code relations between Employee Empowerment and Management Support.

Type of organisational structure

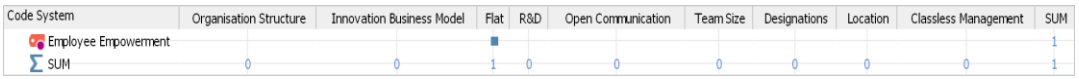


Figure 4.98: Total code relations of co-occurrence of codes between Employee Empowerment and Organisation Structure

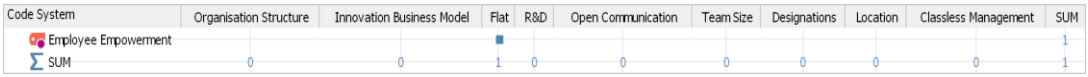


Figure 4.99: Number of documents per code relations of co-occurrence of codes between Employee Empowerment and Organisation Structure

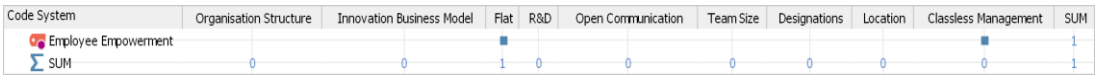


Figure 4.100: Total code relations of near codes between Employee Empowerment and Organisation Structure

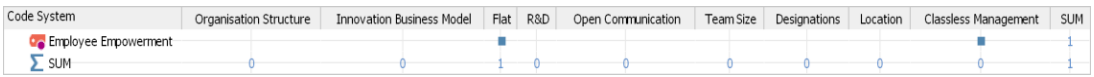


Figure 4.101: Number of documents per code relations of near codes between Employee Empowerment and Organisation Structure

The Complex Coding Query feature with the following functions were used to retrieve code relations between Employee Empowerment and Organisation Structure.

- If inside - Search for segments assigned to any one of the codes in Employee Empowerment that are also completely surrounded by a segment assigned to the code Organisation Structure: 0 segments

- Followed by - Search for segments assigned to any one of the codes in Employee Empowerment that is followed by a segment assigned to the code Organisation Structure within no more than 1 paragraph: 4 segments
- Near - Search for segments assigned to any one of the codes in Employee Empowerment that is preceded or followed by a segment assigned to the code Organisation Structure within no more than 1 paragraph: 4 segments

The above results generated indicated that there were code relations between Employee Empowerment and Organisation Structure.

Interviewee F said that they encourage innovation through organisation structure by employee empowerment and classless management. I's organisation is having a flat structure and as there are no Project Managers or Scrum Masters, there is a lot of empowerment for Engineers to give business solutions.

Incentives for innovation

Figure 4.102: Total code relations of co-occurrence of codes between Employee Empowerment and Innovation Incentives

Figure 4.103: Number of documents per code relations of co-occurrence of codes between Employee Empowerment and Innovation Incentives

Figure 4.104: Total code relations of near codes between Employee Empowerment and Innovation Incentives

Figure 4.105: Number of documents per code relations of near codes between Employee Empowerment and Innovation Incentives

The Complex Coding Query feature with the following functions were used to retrieve code relations between Employee Empowerment and Innovation Incentives.

- If inside - Search for segments assigned to any one of the codes in Employee Empowerment that are also completely surrounded by a segment assigned to the code Innovation Incentives: 0 segments
- Followed by - Search for segments assigned to any one of the codes in Employee Empowerment that is followed by a segment assigned to the code Innovation Incentives within no more than 1 paragraph: 0 segments
- Near - Search for segments assigned to any one of the codes in Employee Empowerment that is preceded or followed by a segment assigned to the code Innovation Incentives within no more than 1 paragraph: 0 segments

The above results generated indicated that there were no code relations between Employee Empowerment and Innovation Incentives. Only Organisation Structure influenced the organisation of IT projects for the innovation management method Employee Empowerment.

4.4 Chapter Summary

This chapter presented the findings regarding the impact of contemporary innovation management trends towards the organization of IT projects. Theoretical propositions were developed to address the following research questions in this study:

1. What aspects of innovation management influences the organisation of IT projects?

2. For different innovation management methods what is the ordering of the factors which influence the organisation of IT projects?

In the next chapter, an overview of the results, limitations, and suggestions for future research is presented.

5. CONCLUSION

5.1 Chapter Overview

In this chapter, an overview of the findings is first presented. Subsequently, the recommendations and limitations of the study is discussed. This study makes contributions to the literature of both project management and innovation management. Finally, this study reveals important directions for further research.

5.2 Research Results

Based on the current state of research, this study aimed at narrowing the research gap of the impact of innovation management trends towards the organisation of IT projects in Sri Lanka. This study integrated both innovation and project management research streams and developed a more holistic conceptualization of how innovation management trends impact the organisation of IT projects and the ordering of the factors for each innovation management method which influenced the organisation of IT projects. In order to do this, two questions to guide the research were formulated.

In order to check the impact of innovation management trends towards the organisation of IT projects, along the dimensions of cultural, leadership, rewards and resources were analysed. Results in section 4.3.1.6 showed that the overall ordering of the innovation management trends based on the code frequency per document and number of documents per code were as follows:

1. Reward Structure
2. Recruitment
3. Training and Development
4. Gamification
5. Employee Empowerment

Thereafter in what sequence the dimensions of project organisation were aligned to each innovation management trend was analysed. Results in section 4.3.2.1 showed that the overall ordering of factors which influenced the organisation of IT projects for the innovation management method Reward Structures were as follows:

1. Organisation Structure
2. Innovation Incentives
3. Management Support

Based on grounded theory (Glaser & Strauss, 2009; Miles & Huberman, 1994), the following hypotheses were generated for the above results:

1. There is a significant positive correlation between Reward Structures and Organisation Structure.
2. There is a significant positive correlation between Reward Structures and Innovation Incentives.
3. There is a significant positive correlation between Reward Structures and Management Support.
4. There is no significant correlation between Reward Structures and Team Distribution.

Results in section 4.3.2.2 showed that the overall ordering of factors which influenced the organisation of IT projects for the innovation management method Recruitment were as follows:

1. Organisation Structure
2. Innovation Incentives

Based on grounded theory (Glaser & Strauss, 2009; Miles & Huberman, 1994), the following hypotheses were generated for the above results:

1. There is a significant positive correlation between Recruitment and Organisation Structure.
2. There is a significant positive correlation between Recruitment and Innovation Incentives.
3. There is no significant correlation between Recruitment and Management Support.
4. There is no significant correlation between Recruitment and Team Distribution.

The factors Team Distribution, Management Support and Organisation Structure were at the same level for the innovation management method Training and Development as shown in section 4.3.2.3.

Based on grounded theory (Glaser & Strauss, 2009; Miles & Huberman, 1994), the following hypotheses were generated for the above results:

1. There is a significant positive correlation between Training and Development and Organisation Structure.
2. There is a significant positive correlation between Training and Development and Management Support.
3. There is a significant positive correlation between Training and Development and Team Distribution.
4. There is no significant correlation between Training and Development and Innovation Incentives.

Only Organisation Structure influenced the organisation of IT projects for both Gamification and Employee Empowerment as shown in section 4.3.2.4 and 4.3.2.5 respectively.

Based on grounded theory (Glaser & Strauss, 2009; Miles & Huberman, 1994), the following hypotheses were generated for the above results:

1. There is a significant positive correlation between Gamification and Organisation Structure.
2. There is no significant correlation between Gamification and Management Support.
3. There is no significant correlation between Gamification and Team Distribution.
4. There is no significant correlation between Gamification and Innovation Incentives.
5. There is a significant positive correlation between Employee Empowerment and Organisation Structure.
6. There is no significant correlation between Employee Empowerment and Management Support.
7. There is no significant correlation between Employee Empowerment and Team Distribution.
8. There is no significant correlation between Employee Empowerment and Innovation Incentives.

5.3 Recommendations

In the observation of 11 organisations, it was found that there were no two identical innovation management implementations and each organisation provided a different experience. Designing an innovation management implementation for your organisation will require to carefully assess the following:

- K mentioned that the opportunities to attend conferences depended on the situation. Interviewee N described that opportunity is larger for services than product companies because they had a wide choice whereas product company's opportunities were domain related and narrowed. Therefore, it is important to do a situation analysis on innovation management in your organisation. Refer to sections 4.3.1.4 and 4.3.2.1 for more information.

- A provided grants and funds for research, which did not necessarily have to be related to the business in order to have T shaped people in the organisation. Through the sustainable innovation programmes carried out by I's organisation, they would provide yearly innovation rewards, sponsorships to attend conferences, research publications and masters fee sponsorships. Also they found that business value should be there or else it is not sustainable. Therefore, it is important to assess the benefits the organisation would most value in receiving from the implementation. Refer to sections 4.3.1.1, 4.3.1.3 and 4.3.2.1 for more information.

Successful innovation management for your organisation will not be identical to other organisations. In order to introduce or improve innovation management the following is recommended:

1. The research findings in section 4.3.2.1 showed that in order to foster innovation in the organisation, I and M's organisations have a budget for innovation. The findings suggest that it is useful to determine where to invest the budget for innovation management.

2. In E's innovation business model, employees were rewarded for the innovation challenges conducted and they were also selected to participate at conferences that were linked to the business. I's innovation business model supported sustainable innovation programmes, where yearly innovation rewards, sponsorships to attend conferences, research publications and Masters fee sponsorships were provided. In C's business model, ideas were within employees and not available in the market. In order to bring those ideas out, they have competitions to come up with innovative ideas. Therefore, it is important to build an innovation management implementation that meets the organisation's needs. Refer to sections 4.3.2.1 and 4.3.2.4 for more information on different innovation business models.

3. The research findings in section 4.3.1.2 showed that in M's organisation in order to change the mind-set of the employees to be innovative, an innovation challenge was conducted and the ideas would come from vendors, clients and

employees. Thereafter a prototype was developed and a demo was done for the client to buy. M was in total agreement that gamification was one of the trending ideas to foster innovation and also mentioned that it is not the only way but one of the key ways. This implies that the implementation needs to be introduced in a way that the organisation accepts it.

4. Research findings showed that F's organisation had established a developer community and encouraged innovation through it and also tied it with production in order to get ROI. I's model had competitions for teams as well as individuals. The lessons learnt from this model was that a formal innovation process will not get the expected ROI. In the future in order to foster innovation not to formalize but drive it with keeping in mind that innovation happens when someone has a passion. Therefore, it is recommended to identify ways to evaluate the outcome of the investment. Refer to sections 4.3.1.3 and 4.3.2.4 for more information.

This study revealed different innovation management trends and the results of it. In order for the innovation management model to successfully fit the organisation and to reap the benefits from the implementation to the organisation, managers should come up with different strategies.

5.4 Research Limitations

The study encountered the following limitations with regard to theory and to the empirical study.

Methodological and empirical limitations

- Data sources for the interviews were limited because the preliminary review of opportunities to study innovation management in the Sri Lankan context revealed that only a selected set of organisations would be relevant to the research and a deeper study of management trends at each of these organisations to be necessary.

Theoretical limitations

- Gaps in the literature. The variables Trend and Project Organisation had a lot of research relevant to it and independent of each other. Only a small fraction of the existing literature attempted to establish any relationships between these variables.

5.5 Future Research

This study highlighted the impact of innovation management trends towards the organisation of IT projects. Several important findings were revealed. Suggestions for areas of interest for future research and development are as follows:

- Further study how giving more responsibility can contribute to innovation.
- Comparing innovation management in IT projects from a classless management perspective.
- Study how innovation management in IT projects could lead to organisational learning.
- Study the effect motivation has on innovative IT projects.
- Researching how job performance can be evaluated in a way which contributes to innovation.
- Study how outdoor training can influence innovation management.
- Study how designations can contribute to innovation.
- The difficulties and challenges that have to be overcome to achieve innovation management success.

5.6 Chapter Summary

This study has contributed to a better understanding of the impact of innovation management trends towards the organisation of IT projects. The study has shown that organisation of IT projects was clearly influenced by innovation management trends, with the innovation management method reward structures topping the ordering of the aspects of innovation management that influenced the organisation of IT projects. Also various hypotheses were derived from the findings of this study. Finally, possible avenues for future research and suggestions to support managers of IT projects in their decision making and planning were discussed.

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