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Improving job fit and productivity in New Zealand - A critical assessment of John Holland's RIASEC Model

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Abstract

The impact of employee engagement on productivity and organisational performance is a highly researched subject within organisational and personnel psychology. Gallup (2021) *State of the Global Workplace 2021 Report* claims that lost productivity of dis-engaged employees equates to 18% of their annual salary. Employee interests and their correlation with job-fit and satisfaction have been the subject of ongoing research in vocational psychology. New Zealand's Human Resource Management processes, derived from personnel theory, recommend a 'top down' approach for employee recruitment and placement; business strategy and performance objectives define required employee strengths, values, skills and disposition for organisation-fit. Vocational theory, specifically Holland's RIASEC Model, advocates a 'bottom up' approach to maximise employee job-fit; employee interests, defined by personal preferences for activities, skill development, problem solving attributes and outlook, are paired with occupations that match employee interests. This study assessed the potential contribution of Holland's RIASEC Model and Holland's Self-Directed Search assessment to improve the understanding of employee interests, employee job-fit, and recruitment practice in New Zealand.

Results of the study, which used a mixed methods research approach incorporating both semi-structured and structured interview methods, verified research assumptions and demonstrated the usefulness of Holland's RIASEC Model for understanding and categorising employee interests. Data analysis derived from Holland's StandardSDS assessment indicated that employee job-fit is Average across the total population of 26 participants, with high level of job-fit at several educational organisations. Participants welcomed the increased understanding of their interests, workplace roles and measurement of their job-fit, which confirmed many are in the 'right place.' The results identified leave intentions of 25% study participants and supported management interventions to improve employee engagement. A third of the participants, who act in supervisory roles, expressed an intention to implement the StandardSDS assessment as a recruiting tool and device to support workplace role modification, improved job-fit, engagement, competency, and productivity.

The study has contributed to the body of knowledge associated with personnel and vocational psychology in the New Zealand context. The study has exposed a potential gap between personnel and vocational theory regarding employee recruitment, job-fit and productivity modelling, and tertiary Human Resource Management curricula. Recommendations are made for further investigation and research regarding the application of the Holland RIASEC Model to the New Zealand workplace; an expanded version of this study as well as a random-sample longitudinal study to correlate the use of Holland's RIASEC Model as a recruiting and placement approach with improved employee engagement, retention and productivity.

Preface and Acknowledgements

I'm pleased to take the opportunity to acknowledge and express my appreciation to all who have contributed to my discovery, interest and investigation of career development theory and its application to the workplace. This includes my two eldest daughters who recognized a need for career counselling which they received from a qualified career psychologist, who, in turn, suggested I undertake a postgraduate diploma in Career Development at Auckland University of Technology, led by Dr. Dale Furbish, who introduced me to Robert C. Reardon PhD, Janet G. Lenz PhD, and James P. Sampson Jr. PhD, guiding lights in the world of vocational psychology. Thanks to my career development colleague A. Brown and ally, C. Bishop, who enabled a trial application of career development theory at one of my former places of work, eventually leading me to the research question for this study. All part of the flow which continues today.

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Chapter 1. Introduction

Employee motivation and the impact of an engaged workforce on business productivity have been the subject of ongoing research and business improvement initiatives worldwide. New Zealand ranks low in terms of productivity and quality of management. Improved quality of management, including better employee engagement and business performance, has been estimated to be able to boost productivity in manufacturing by as much as 10 percentage points (Bloom et al. 2011). The Gallup (2017) World Report suggests a lack of employee engagement may be a contributing factor to low productivity within New Zealand where “just 14% are engaged in their job, showing up every day with enthusiasm and the motivation to be highly productive”(Gallup, 2017, p. 8).

This study explores these themes and inter-dependencies between New Zealand business productivity, employee engagement, employee-job fit and employee recruiting practise, focussing on identification and characterisation of employee interests in relation to workplace role. Specifically, this study asks whether application of a vocational theory model can enhance organisational understanding of employee interests, and potentially lead to improved employee-job fit, increased employee satisfaction, engagement and productivity.

As will be discussed in the review of literature (Chapter 2) it seems reasonable to conclude that people are more likely to be engaged with work they are interested in, a concept that appears to be under-utilized in New Zealand organizations, in large part because of current HRM practice.

The author was first introduced to vocational interest theory by a professional career development counsellor who was contacted to support the author’s children with their educational and career choices. As a result of a subsequent counselling session for himself, the author recognized the potential application of the vocational interest model to the business workplace. The concept of employee-environment alignment, or misalignment appeared to be at least a partial determinant of job satisfaction, based on the author’s direct experience with colleagues and direct reports during twenty years of industrial management experience. At the suggestion of the career development professional, the author pursued and achieved a graduate certificate in career development at Auckland University of Technology. Subsequently, the author conducted a pilot study to test employee job fit with his engineering management team at a major New Zealand manufacturer, confirming the potential to improve employee-environment or job fit and satisfaction. Pursuit of additional, research-based confirmation of the applicability of the vocational interest theory and potential to improve job fit in the New Zealand workplace is the motivation for the author’s pursuit of this study.

Statement of the Problem

Existing models for workplace role alignment, referred to in this study as “job fit”, while well established and widely used by academics and career development practitioners, were designed in a North American context, and it is not clear to what extent they are applicable in New Zealand. Furthermore, very little is known about the extent of alignment of employee interests with their role in the New Zealand workplace, nor do we have a clear overview how employee interests feature in recruitment processes. There is potential for improved employee motivation, engagement and productivity if employee interests and workplace role alignment is found to be incongruent within the New Zealand workplace.

Purpose of the Study

Ideally, a longitudinal study would be conducted to investigate the correlation between employee interests and employee-job fit with employee satisfaction, engagement and productivity. Such a study is beyond the scope of this thesis.

This study explores the tensions between New Zealand job seeking, recruitment and placement practices on the one hand, and the rich evidence on the relationship between interests, workplace alignment and key vocational outcomes on the other. It asks:

1. Do New Zealand employees understand their personal interests?
2. Do New Zealand employers know how to define the interests of their employees and the interest content of roles in their workplaces?
3. What value does New Zealand management and HR recruiting place on understanding employee interests and matching them with workplace role content?
4. To what degree are employee interests aligned with the inherent interests of their workplace role?

Establishing a method for measuring employee interests and interests inherent in a workplace role is a stepping stone towards answering these questions. The goal of this study is to critically examine John Holland’s RIASEC Model as a tool for categorising and understanding employee interests and the interest alignment for their workplace role in New Zealand. The Holland RIASEC Model is a proven tool within the domain of vocational psychology, widely used by career development practitioners to match client interests with inherent interests of a chosen career. The potential application of the Holland RIASEC Model to enhance employee recruiting, placement and management in the New Zealand workplace inspires questions for this study.

Research Question

Is the Holland RIASEC Model as a useful tool for categorising and understanding Employee Interests in the New Zealand workplace?

In order to be useful, the Holland RIASEC Model would need to provide valuable information for employees, not otherwise available, while at the same time providing a schema for improved employment choice decision-making and workplace role enrichment. The research investigated the following assumptions and the potential for improved knowledge, fit and productivity using Holland's RIASEC Model;

1. Employees have insufficient knowledge of interests to make informed choices
2. Organisation have insufficient knowledge of employee interests and the interest profiles for role(s) to match employee and role.
3. Managers can create conditions for better fit when they understand employee interests and the interest content of jobs.
4. Employees experience better job fit when they have made informed choices.
5. Managers see an important connection between fit and productivity.

Summary

The research critically assesses Holland's RIASEC model as a tool for categorising and understanding employee Interests in the New Zealand workplace using a mixed-method, cross-sectional, field study conducted at five different workplaces.

This thesis is structured as follows: Section 2 draws on available theory and empirical evidence to set out the conceptual framework explaining the relationships between employee interest, workplace role alignment and key vocational outcomes. Section 3 outlines the Method in detail. Support for development of thematic analysis with the advancement of themes during the interview process will be discussed in the research results (Section 4), in addition to correlation analysis between employee self-defined and Holland RIASEC interests and comparison with interests inherent in the employee's workplace role.

The focus of this analysis is primarily on employee interests in relation to job fit. The primary focus is employee interests in relation to job fit, but we explore this in context of workplace management and HR recruitment processes.

Chapter 2. Literature Review

Vocational theorists argue that self-knowledge, an understanding of personal interests and values, is a requirement for good career decision-making (Sampson, 2020), while experts in human resources, the domain of personnel psychology, promote an organisation's understanding job candidate behavioural traits, attitudes and work experience as key inputs for a successful recruiting process. Organisational psychologists Frederick Herzberg (Herzberg, 1968b) and Paul Spector (Spector, 1997) promote interesting work as an important factor for increased employee motivation and job satisfaction. Individuals can make choices that are literally, 'not in their best interests,' if unaware of their personal interests and values. This literature review explores the perceived theoretical gap between vocational, personnel, and organisational psychologies and the impact on processes informed or uninformed by these theories on the employee placement within New Zealand organisations.

The literature review begins by defining employee interests, and then discusses how interest-based theories developed over time. The review will also consider the current view of interests within the New Zealand business context. Finally, business literature on interests will be summarized and integrated into a model—the *Employee Interest-Fit-Productivity Model*—if interests are to be useful in the New Zealand business context.

Interests in Organizational Literature

Employee interests have been recognised as a key contributor to employee motivation, engagement and workplace productivity within the domain of organizational psychology. As far back as 1968, in a breakthrough *Harvard Business Review* article entitled, *One more time: How do you motivate employees?* (Herzberg, 1968a) Frederick Herzberg argues that there are six fundamental “motivating drivers that shape employee satisfaction: achievement, recognition, work itself, responsibility, advancement and growth” (Herzberg, 1968b, p. 56). Herzberg implies that the employee's interests in the work is an important factor by designating the work itself as a motivator.

In his discussion of his Two Factor Theory, Herzberg (1968a) promotes a re-engineering of workplace roles as a concept to increase employee motivation. Herzberg recommends implementing the “principles of vertical job loading to enrich the job and make it more interesting” (Herzberg, 2003, p. 7). Herzberg argues that job loading can be horizontal or vertical where horizontal loading means additional, similar tasks are added to task responsibility which does not increase motivation. Several principles of vertical loading are removing some management control, increasing accountability for own work and giving a person a complete natural unit of work, (instead of piece work). Vertical loading augments motivating factors like responsibility, recognition, achievement and growth supporting aspects of the work that may appeal to the employee's preferred activities, skills and self-perception which are components of interests according to Holland (1997).

Paul Spector makes a similar inference on the relationship between interests and job satisfaction (Spector, 1997). His *Job Satisfaction Survey* assesses nine facets of job satisfaction and includes four questions related to the nature of work; (1) “I sometimes feel my job is meaningless, (2) I like doing the things I do at work, (3) I feel a sense of pride in doing my job, (4) My job is enjoyable (Spector, 1997, pp. 75-76).” Neither Herzberg nor Spector appear to have documented specific definitions of employee interests.

Employee Interests

Interests are defined as “The feeling of wanting to give your attention to something or of wanting to be involved with and to discover more about something” (Cambridge Dictionary, 2021).

In 1997, John Holland, now a leading theorist of vocational psychology, provides a detailed definition of interests in his *Theory of Vocational Personalities and Work Environments* (Holland, 1997). Holland conceptualized a model consisting of six personality types: Realistic, Investigative, Artistic, Social, Enterprising and Conventional. The second idea Holland (1997) proposes in his theory is that environments in which people live and work can be categorised by the same six types as the six personalities. In the first assumption supporting his theory, Holland (1997) explains how personality types and associated interests are developed

a person learns to prefer some activities as opposed to others as a result of a variety of cultural and personal forces including peers, biological heredity, parents, social class culture and the physical environment. Later in life, these preferred activities become strong interests which lead to a group of competencies (p. 2).

Interests are individual preferences, which can be elaborated upon in terms of preferred activities, competencies, and attitudes. Holland (1997) consolidates specific interests and competencies with associated attitudes and skills for coping with environmental problems and tasks, as attributes for each of the six specific vocational personality types, often referred to as the Holland RIASEC Model. An outline of characteristics, preferred occupations, attitudes, skills and values based on interests (or preferences) of each of the six personality types is shown in Table 1.1

Table 1.1
The Six SDS Personality Types

Realistic **R** types like realistic occupations such as mechanical engineer, landscape gardener, sound technician, cook, exterminator, plumber, locksmith, or safety inspector. They usually have mechanical and athletic abilities, and they like to work outdoors and with tools and machines. They typically like to work with things more than people. The **R** type is described as:

Conforming	Hardheaded	Materialistic	Normal	Shy
Frank	Honest	Modest	Persistent	Thrifty
Genuine	Humble	Natural	Practical	

Investigative **I** types like investigative occupations such as biologist, surgeon, veterinarian, airplane pilot, translator, pharmacist, or actuary. They usually have mathematical and scientific ability and like to work alone. They typically like to explore and understand things or events rather than persuade others. The **I** type is described as:

Analytical	Critical	Intellectual	Modest	Rational
Cautious	Curious	Introverted	Pessimistic	Reserved
Complex	Independent	Methodical	Precise	

Artistic **A** types like artistic occupations such as writer, graphic designer, fashion designer, public relations representative, editor, or architect. They usually have artistic skills, enjoy creating original work, and have a good imagination. The **A** type is described as:

Creative	Expressive	Impractical	Introspective	Open
Disorderly	Idealistic	Impulsive	Intuitive	Original
Emotional	Imaginative	Independent	Nonconforming	

Social **S** types like social occupations such as teacher, counselor, nanny, librarian, speech therapist, or home health aide. They usually like to be around other people, are interested in how people get along, and like to help other people with their problems. They typically like to help, teach, and counsel people more than engage in mechanical or technical activities. The **S** type is described as:

Convincing	Generous	Kind	Social	Understanding
Cooperative	Helpful	Patient	Sympathetic	Warm
Friendly	Idealistic	Responsible	Tactful	

Enterprising **E** types like enterprising occupations such as salesperson, contractor, entrepreneur, human resources specialist, lawyer, newscaster, or lobbyist. They usually have leadership and speaking abilities, are interested in money and politics, and like to influence people. They typically like to persuade or direct others more than work on scientific or complicated topics. The **E** type is described as:

Acquisitive	Ambitious	Energetic	Optimistic	Self-confident
Adventurous	Attention-getting	Extroverted	Pleasure-seeking	Sociable
Agreeable	Domineering	Impulsive	Popular	

Conventional **C** types like conventional occupations such as accountant, cashier, fire inspector, data manager, or proofreader. They usually have clerical and math abilities, and they like to work indoors and organize things. They typically like to follow orderly routines and meet clear standards, avoiding work that does not have clear directions. The **C** type is described as:

Careful	Efficient	Orderly	Thrifty
Conforming	Inhibited	Persistent	Unimaginative
Conscientious	Obedient	Practical	

Table 1.1 The Six SDS Personality Types

Adapted and reproduced by special permission of the Publisher, Psychological Assessment Resources, Inc. (PAR), 16204 North Florida Avenue, Lutz, Florida 33549, from the Standard Self-Directed Search Professional Manual by John L. Holland, PhD and Melissa A. Messer, MHS. Copyright 1970, 1977, 1985, 1990, 1994, 2013, 2017 by PAR. Further reproduction is prohibited without permission from PAR.

In the second of the four working assumptions of his theory, Holland (1997) asserts the existence of six model environments each bearing the same designation as the RIASEC vocational personality type. Each environment provides problems, and activities that are congruent with the competencies, interests, attitudes and outlooks of the designated RIASEC type. Holland (1997) goes on to assert that people naturally seek out environments and others that reflect and resemble their personality type, specifically their attitudes and opportunities to practice and exhibit their skills and competencies.

In the third assumption of his theory, Holland (1997) argues that people naturally seek compatible environments, where they can demonstrate and validate their interests, competencies, attitudes and values. For example, a track and field athlete, a Realistic type, prefers to spend time at their athletic field, training and interacting with other athletes while exerting physical energy to accomplish tasks either indoors or outdoors. An accountant, Conventional type, prefers to be indoors analysing data and balancing things out, working alone. Holland (1997) explains that a person's search for a desirable environment is carried on in many ways, at different levels of consciousness, and over a long period of time.

The fourth assumption of Holland's Theory states "Behavior is determined by an interaction between personality and environment" (Holland, 1997, p.4). Holland explains that 'pairing,' which can be referred to as a measurement of the degree of congruency between a vocational personality and the environment in which they work or live, can be used to predict behaviour outcomes of a person. These outcomes refer to a person's choice of job or job change, level of satisfaction derived from opportunity to demonstrate skills and sense of achievement while working on meaningful tasks. This concept describes several essential elements to be considered in later discussions of person-job fit or person-environment congruency. In short, people are satisfied if they can work on tasks and in an environment that matches their interests. The Holland Hexagon, (Figure 1), was created to illustrate 'pairing' of personality types and environments. The closer a person's vocational personality is located to their environment the more aligned, or congruent their interests are with their work or life setting. Muchinsky echoes this conclusion in a review of Holland's Theory, "He proposes that a match or an alignment between individual interests and occupational types is critical for underlying career satisfaction and longevity and refers to this matching process as person-environment congruence, or more succinctly, "fit" "(Muchinsky, 1999, p. 128).

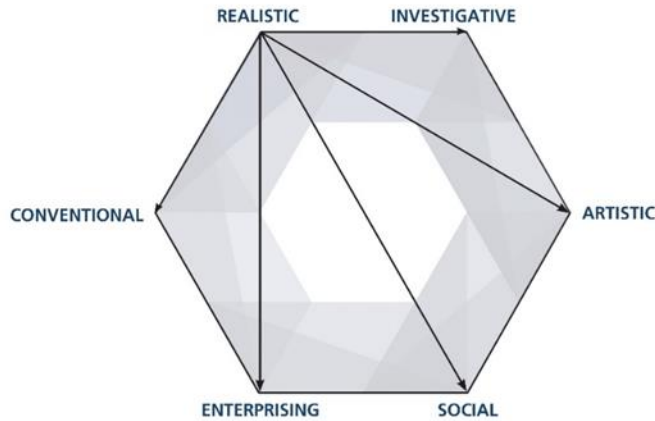


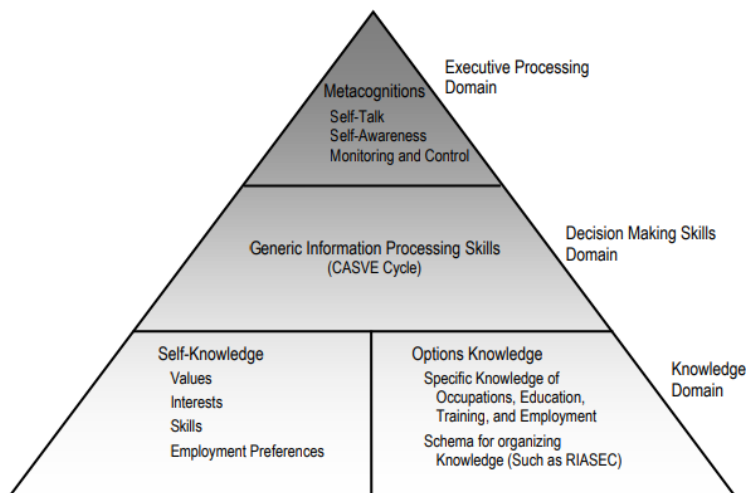
Figure 1.1. Using the RIASEC hexagonal model to interpret person–environment relations.

Figure 1 Holland's Hexagon

Adapted and reproduced by special permission of the Publisher, Psychological Assessment Resources, Inc. (PAR), 16204 North Florida Avenue, Lutz, Florida 33549, from the Standard Self-Directed Search Professional Manual by John L. Holland, PhD and Melissa A. Messer, MHS, Copyright 1970, 1977, 1985, 1990, 1994, 2013, 2017 by PAR. Further reproduction is prohibited without permission from PAR.

A discussion of the development and application of Cognitive Information Processing (CIP) Theory (Sampson, 2020), emphasizes, from a vocational psychology practitioner perspective, the importance and value of understanding personal interests and self-knowledge as pre-requisites for good employment and career decision-making. The developers of CIP Theory, highly respected researchers and practitioners at Florida State University, created the CIP Theory in response to a perceived need for a proven, robust career decision-making process to help individuals.

Figure 2
Practitioner Version of the Pyramid of Information Processing Domains



Adapted from *Career development and services: A cognitive approach* (p. 28), by G. W. Peterson, J. P. Sampson, and R. C. Reardon, Copyright 1991 by Brooks/Cole. Adapted with permission.

Figure 2 Pyramid of Information Processing Domains

The three domains illustrated in the Pyramid of Information Processing (See Figure 2), represent the components that must be considered and satisfied for a careful and considered career decision according to Sampson (2020)

Self-Knowledge is defined as an understanding of values (motivates individuals to work), interests (activities or behaviors individuals enjoy), skills (activities or behaviors individuals perform well) and employment preferences (aspects of work individuals want, or want to avoid, such as travel or shift work (p.8).

Self-knowledge is an essential element for rational decision-making about study, career and job choices. Sampson (2020) promotes Holland's RIASEC model, 1997, as a schema for organising this Self-Knowledge and Options Knowledge, providing support for the importance of self-knowledge and Holland's RIASEC Model as a useful tool for categorizing interests associated with environments and workplace roles.

Employee Interests from the Human Resource Management Perspective

It is not clear to what extent application and awareness of vocational theory and the use of tools for assessment of personal interests is undertaken in the New Zealand workplace. Academic literature on the views of NZ human resource practitioners regarding personal interest assessment and vocational theory is limited, but viewpoints can be discerned from recommendations in professional journals and academic courses.

The Human Resource Institute of New Zealand HRINZ website provides resources to support human resource practise. One of HRINZ's suggested resources, *HR Manager, A New Zealand Handbook* (Rudman, 2017), does not list any citations for vocational theory, interests or career development theory within its chapter on Career and Personal Development. In a second HRINZ reference, *Getting the Right People* (Rudman, 2010), the author dismisses a key hypothesis of vocational theory stating,

The assumption here is that people are more likely to succeed in occupations which interest them. However, there is little evidence to support this, except at the broadest level (p. 130).

In an almost identical comment, Stone (2017), the author of *Human Resource Management*; recommended textbook for Massey University's Master of Management compulsory course—dismisses interest tests for consideration as part of the employee recruiting process.

Interest tests aim to measure how an applicant's interest patterns compare with the interest patterns of successful people in a particular job. The underlying assumption in the use of interest tests is that applicants are more likely to succeed in a job they like. Unfortunately, in the employment situation, applicants may be motivated to fake their answers, with the result that interest tests often have limited value as a selection tool (p. 288).

In his concluding comments about interest tests Stone remarks, "They are, however, useful for helping individuals choosing a career or contemplating a career change. Popular tests include Holland's Vocational Preference Inventory, the Strong Interest Inventory and the Rothwell-Miller Interest Blank"

(Stone, 2017, p. 218). Despite this comment, Stone (2017) does not mention vocational theory or career development models in the chapter entitled, *Career Planning and Development*, within the same textbook, but promotes an individual's career calling, performance, exposure, sponsorship, personal development, international experience and goal setting as import factors contributing to career development success. Stone (2017) doesn't define or provide a method of establishing career calling, a key aspect of Holland's RIASEC Theory and Holland's Self-Directed Search (Holland, 1970), covered later in this chapter.

Hunt (2007), certified Strategic Professional of Human Resources in the USA, mirrors Rudman (2017) and Stone's (2017) viewpoints on consideration of interests in the HR domain. Hunt (2007) shares expertise in the field of employee assessments in *Hiring Success The Art and Science of Staffing - Assessment and Employee Selection*, where he relegates career interest inventories to outplacement and career development practice, and are not to be considered for employee selection. In the glossary section of his textbook, Hunt (2007) describes interests in words Holland (1997) would be agreeable to, but fails to mention vocational psychology, Holland's RIASEC Model or the Self-Directed Search, an interest assessment undertaken by more than thirty-five million people, in the glossary or bibliography of his book (Hunt, 2007).

John Holland's Theory is the subject of discussion in *Work Psychology Understanding Human Behaviour in the Workplace* (Arnold, 2016), the required textbook for Massey University's course Personnel Psychology and Career Development which is part of a Bachelor of Arts degree in Business Psychology. Arnold (2016) describes Holland's vocational personality type as "a reasonably good reflection of basic personality dimensions identified in more general psychology," and Holland's Hexagon as a good approximation. Arnold (2016) argues that the evidence that congruence between person and environment, a key assumption for career decision making satisfaction according to Holland (1997), is only weakly correlated with overall job satisfaction. Arnold (2016) has possibly misconstrued Holland's assumption applying it to job satisfaction instead of career-decision making satisfaction. While job satisfaction is a function of many variables, job fit is likely to determine the extent to which there is potential for job satisfaction.

The most widely used approach for candidate selection is based on assessment of personality dimensions, trait and behaviour, in order to predict employee performance. Arnold (2016) describes Holland's definition of vocational personality types and their assessment as an 'unusual and rare.' The deliberate transparency of the SDS and the opportunity for self-assessment and interpretation are problematic according to Arnold (2016). A direct contradiction of Holland's intention to "create an inventory that would be self-scored and would avoid the problems involved in separate answer sheets, mailing, scoring and so on" (Reardon, 2015). Arnold (2016) argues that psychometric testing is the

preferred method within Personnel psychology, for successful identification and matching of an employee's specific cognitive ability with criterion-related validities for a wide range of jobs.

In conclusion, the practitioner-based HRM literature infers that employee preferences, or interests, may be considered for career development purposes, but they should not be considered as indicators of employee performance, and consequently, do not merit consideration for employee recruitment practices within the domain of personnel psychology and human resource management.

Employees Assessment in New Zealand Organisations

In a Harvard Business Review article entitled 'Hire for Attitude, Train for Skill,' Taylor (2011) shares Southwest Airlines People Department executive Sherry Phelp's recruiting maxim, "The first thing we look for is the 'warrior spirit'," explaining the history of Southwest has been "a battle to fight off the big guys, and competitors all of whom want to squash us." Taylor (2011) goes on to share Phelps view that hiring industry veterans is avoided if they don't have the right attitude, explaining they would rather hire teachers, waiters or police officers than grizzled airline veterans. This example of future performance focus at Southwest reflects the pervasive philosophy of personnel recruiters; selecting employees who will produce a positive contribution to organisational performance.

Williams describes a 'top down' approach to employee selection, similar to Phelps' in Stone, 2017;

Because an organisation's success depends on it having the right people in the right jobs at the right time, the organisation's strategic business objectives and culture should determine the people selected. In other words, the choice of selection criteria should be consistent with the organisation's strategic direction and culture. Strategic selection aligns employment activities with the organisation's business strategies to produce a positive contribution to organisational performance, legal compliance and ethical obligations (p. 275).

Further definition of employee characteristic requirements, supporting Arnold (2016) and Stone (2017) are found in *The Handbook of Employee Selection* (Farr & Tippins, 2017), where Chan and Lievens, section editors for Part III, explain that an employee selection interview focused on assessment of personality characteristics is probably the most frequently used method for employee selection. Interview constructs for the employee selection process are defined as; (1) mental ability, (2) knowledge and skills, (3) basic personality characteristics (such as the Big Five), (4) applied social skills and social competence, (5) interests and preferences, (6) organizational fit, and (7) physical attributes (Farr & Tippins, 2017). The 'interest and preferences' portion, the top consideration for vocational psychologists, comprises 4% of the assessment while the largest focus (35%) is on personality characteristics as defined by the Five Factor Model (FFM).

Hough and Dilchert, section editors for *Chapter 13 - PERSONALITY Its Measurement and Validity for Employee Selection*, explain, "Personality constructs now play key roles in our models of individual and team performance" and "today the Five-Factor Model (FFM) is the most widely accepted structure

of personality variables”(Farr et al. (2017, p. 300). The statement by Hough and Dilchert regarding use of the FFM as the predominate indicator for personality and individual performance suggests the presence of a personality-trait-based paradigm for employee selection within the HRM community. The five broad personality traits described by the Big Five or Five-Factor Model are extraversion (also often spelled extroversion), agreeableness, openness, conscientiousness, and neuroticism (Cherry, 2021).

An additional example of the use of the trait-based theoretical paradigm for employee selection can be found in the *Handbook of Psychology, Volume 12 Industrial and Organizational Psychology* (Weiner & Freedheim, 2003). In Chapter 5, entitled *Personnel Selection and Employee Performance*, Weiner (2003) describes an employee selection process focused on a performance model with two major individual difference determinants of performance: can-do and will-do factors. Individual differences are separated into the two factors ‘Can Do;’ (general cognitive ability), lower order abilities (e.g. spatial perception, math and verbal abilities, reasoning, etc.), physical abilities and past experience and ‘Will Do;’ Personality and Integrity. Both of these determinants are focused on willing and able aspects of the potential employee’s performance behaviours. There is no discussion of employee satisfaction or alignment of employee interests with an organisational role as a selection criterion. Neither Strong or Holland, authors of interest inventories and vocational theory are cited as references for the chapter. This omission implies there is a disconnect between vocational and industrial psychology theoretical approaches to employee selection.

Several studies challenge the FFM personality assessment as the preferred approach to personnel selection and suggest there may be a correlation with Holland’s RIASEC model. In their study entitled, *The Five Factor Model of Personality Holland’s RIASEC Interest Types* DeFruyt states, “The results show that all Big Five domain factors are significantly related to at least one or more RIASEC types, but not all RIASEC scales are correlated with the Big Five” (DeFruyt & Merivelde, 1997, p. 87). In a second study Van Iddekinge explains that vocational interests warrant increased attention within personnel selection literature because “Interests also provide incremental validity beyond measures of general cognitive aptitude and facets of the Big Five personality dimensions in relation to each criterion” (Van Iddekinge et al. 2011, p. 13). Van Iddekinge (2011) propose that interests be used within a selection system of multiple predictors such as the Big Five, and challenges the HRM community to do so. “Overall, the results suggest that vocational interests may hold more promise for predicting employee performance and turnover than researchers may have thought” (Van Iddekinge 2011, p. 1167).

In line with the findings of Van Iddekinge (2011), Chan advocates consideration and incorporation of interest measures within the employee selection process, elaborating on Holland’s (1997) assumption

that individuals are happiest and most productive when working in a job or occupation that holds their interests. Chan continues, “we may require conceptualizations of motivational constructs that are more dynamic than the static conceptualizations that are typical of personality traits, values, and cognitive styles, and each interest dimension probably reflects multiple personality traits and cognitive styles, in addition to motivational constructs” (Farr et al. 2017, p. 335). Chan and Iddekinge argue forcefully for consideration, research and incorporation interests and Holland’s vocational theory within personnel selection processes and theory.

Next, we will incorporate employee interests and organisational selection criteria in an exploration of employee-job and organisation fit.

Holland’s RIASEC Model and Employee-Job Fit

The driving force or foundational belief supporting vocational psychology is the matching or ‘pairing’ of a person’s interests or preferences with their education and work environment for a satisfactory career outcome. The primary driving force for employment recruiting, within the domain of personnel psychology and HRM, is the relationship between and individual’s performance in their workplace role and how that performance supports the organisation’s success. Both viewpoints use the same terminologies to describe the relationship, person-job fit, person-organisation fit, but the definitions are very different as the literature demonstrates.

Revisiting Holland’s RIASEC Theory (1997) for the purposes of defining person-job fit, he argues in assumption three of his Theory that people search for environments, work and living, that allow them to exercise their preferred skills, abilities, values and attitudes by taking on agreeable roles and problem-solving activities. In his fourth assumption Holland (1997) asserts that a person’s behavior is a result of their interaction with the environment. Consequently, a Realistic person is likely to behave favourably in a Realistic work environment such as mechanical engineering or construction where they use their physical abilities working with things rather than people. Conversely, a Realistic person is likely to behave unfavourably if they are working in a Social environment where they are helping people with their problems, discussing feelings and required to express a high degree of sympathy and compassion, usually in an enclosed workspace instead of their preferred outdoor environment. Holland’s (1997) RIASEC Model and Self-Directed Search, an interest inventory assessment created by Holland, provide a means for defining a summary code for an employee’s vocational interests and the interests associated with their workplace.

“The degree of congruence (or agreement) between a person and an occupation (environment) can be estimated by a hexagonal model, (see Figure 1). The shorter the distance between the personality type and the occupational type, the closer the relationship. R person and an R occupation are most congruent. An R person and an S Occupation are the most incongruent” (p.3).

The level of congruency between the employee's RIASEC Summary Code and the three-letter StandardSDS Summary Code for their workplace role is an indication of employee-environment or employee-job fit. Holland published the first version of the Self-Directed Search (SDS) in 1970, as a self-administered, self-scored and self-interpreted, interest inventory based on his RIASEC model. The SDS has been revised and is now available in its 5th Edition, referred to as the StandardSDS, and is available as an on-line, web-based tool, providing additional features including recommendations for congruent occupations, educational courses of study and leisure activities. The StandardSDS Assessment is based on the respondent's preferences for fourteen different Activities, Competencies, Occupations associated with Holland's RIASEC Model, as well as twelve responses for a Self-Rating section. The internet version of the StandardSDS automatically calculates the respondent's three-letter Summary Code and Daydream Occupation Code.

The reliability and validity of the Self-Directed Search have been the subject of numerous research studies. Internal consistency coefficients for Activities, Competencies and Occupations scales range from .71 to .93 and summary score coefficients range from .88 to .94, which indicate a high level of reliability for the StandardSDS assessment according to Holland (2017). Test-Retest Reliability for two intervals, short (two to four weeks) and long (two to four months), ranged from .84 to .96 for the over-all sample indicating substantial stability based on studies described in Holland (2017).

Convergent validity between the StandardSDS measures and other interest inventories with similar constructs such as the Strong Interest Inventory is significant. Holland (2017) compared identical summary scales, except for the Enterprising scale, and demonstrated significant correlations; a match between the first letter of the three-letter summary code for both inventories was achieved in more than 37% the sample followed by a match of 19.6% for the second letter. The StandardSDS Summary Code was also compared to the O*NET Interest Profiler, another interest assessment construct, with a 33% match between first letter codes.

The equivalence between the StandardSDS desktop software, Internet and print versions of the Self-Directed Search, was investigated and no statistically significant differences were discovered according to Lumsden (2004). Correlation between the six RIASEC scale scores for the three formats ranged from .85 to .98 which leads Lumsden (2004) to suggest the administration methods are equivalent.

Three-letter Occupation Codes, based on the Holland RIASEC Model, have been established by several studies and on-going review processes. An occupational classification system, known as *The Occupations Finder* was first published by Holland in 1977. This database regularly updated and is an integral part of the Self-Directed Search StandardSDS assessment and is known as the StandardSDS Occupation Finder. Occupation codes have also been developed for the U.S. Department of Labor's *Dictionary of Holland Occupational Codes DHOC*, and Occupational Information Network (O*NET), an on-line database, which contain more than 1,400 different occupation descriptions and associated

RIASEC codes. The O*NET and *DHOC* are periodically reviewed and updated with classifications for new occupations.

An example of occupation codes for typical manufacturing roles are listed in Table 3. These occupational codes are found in the O*NET database which is available on-line. HR recruiters, candidates or employees interested in making a role change within an organisation can compare a StandardSDS Summary Code with occupation code for the workplace role to determine the level of congruency and consideration for potential recruitment or role change success.

Workplace Position	O*NET Descriptor	O*NET Code	RIASEC (Holland Code)
Production Operator	Helpers--Production Workers	51-9198.00	RC Realistic, Conventional
Production Supervisor	First-Line Supervisors of Production and Operating Workers	51-1011.00	ERC Enterprising, Realistic Conventional
Production Manager	Industrial Production Managers	11-3051.00	EC Enterprising Conventional
Manufacturing Engineer	Manufacturing Engineering Technologists	17-3029.06	RIC Realistic, Investigative, Conventional
Maintenance Tech	Maintenance and Repair Workers	49-9071.00	RCI Realistic, Conventional,
HR Representative	Human Resources Specialists	13-1071.00	ECS Enterprising, Conventional Social

Table 2 RIASEC Interest Code for Occupations (U.S. Department of Labor, 2019)

In *Human Resource Management*, Stone (2017) suggests employee selection criteria and person-job fit are variable depending on an organisation's culture. Person-Job Fit is the goal for bureaucratic cultures and where selection where the organisation needs to match the applicant's KSAO's (knowledge, skills, abilities and other characteristics) with specific job requirements. Entrepreneurial cultures require an organisation-person fit where the goal is a match between the applicant's attitude, values and personality with the organisation's strategic objectives, culture and values according to Stone (2017). Stone (2017) further explains that research demonstrates person-organisation fit is a positive indicator for employee retention and person-job fit is a good indicator of job performance.

Stone (2017) explains that employee selection criteria are intimately related to the organisation's business strategy and culture, and a strategic selection process must be undertaken to align employment activities and contribute to organisational performance. He finishes by describing the attributes of Candidate fit which is comprised of "Culture fit (will fit in), Experience fit (can do the job), Qualifications fit (Can do the job), Ability fit (can do the job), Motivational fit (will do the job)"(Stone 2017, p. 276). This perspective emphasises the HRM focus on a precise definition and performance of job tasks, which Stone (2017) argues leads to a requirement for increased psychological testing to

assess behavioural and attitudinal characteristics of the candidate. Holland (1997) would likely argue that achieving person-job fit, by pairing RIASEC-based codes for the candidate and occupation, would satisfy the four 'motivational fits' espoused by Stone (2017), which raises a question; are HRM selection processes and job-fit theory over-complicated?

Stone's suggestion that specification and adherence to a corporate culture is a pre-requisite for organisational-fit is optimistic. One culture doesn't usually fit all. Defining and targeting employee selection toward a single, generic culture across different RIASEC work environments, always present in large manufacturing organisations, could be a mistake since employees recruited for their generic cultural perspectives and values, will be incongruent with work environments that don't match their RIASEC code. Conversely, the expectation that the right person with the right abilities for the job will share the same values and perspectives as everyone else in an organisation is unlikely. For example, capable and competent engineering employees will create a Realistic-Investigative, (the most common RIASEC code for engineers), sub-culture in their department where people are physically active, appreciate engaging in problem solving activity and like working with equipment and things rather than people. This is a very different culture than is normally found in an accounting or quality department where the population will likely portray attitudes and perspectives associated with Holland's (1997) Conventional typology.

It may, in fact, be impossible to recruit the required contingent of engineers with cultural and attitudinal perspectives that are not Realistic-Investigative, leaving the organisation's recruiters in a bind if the required organisation-fit dictates a Social-Enterprising culture. Some organisations such as accounting and investment businesses are more likely to contain a limited variety of RIASEC types, such as Conventional and Enterprising, and it may be possible to characterise a single, generic culture in these organisations. Stone (2017) cites examples in Korea, Japan and China as examples of companies where generic personality traits such as a good quality education, loyalty and compatibility make a generic corporate culture a reality. Unfortunately, these examples may not apply as easily to organisations in western culture where personal independence is a highly regarded value.

Job analysis is another key requirement for employee recruiting according to Stone (2017) who describes it as a basic HR activity required for high performance work practise. Re-enforcing the 'top down' approach to employee selection, Stone (2017) explains that strategic business objectives are translated to specific work requirements and creation of individual jobs aligned to objectives. The analysis defines job content, requirements and context to a highly detailed degree to provide a basis for a structured interview which Stone (2017) argues is the most effective method for discovering a candidate's knowledge, abilities and experience. "There is strong evidence that candidate performance in a structured interview is a good predictor of job performance" (Stone 2017, p.291).

A recruiting specialist at Hay Group, part of Korn-Ferry, one of the largest international HR consulting firms, supports a similar approach to employee selection as Stone (2017). “The key element is first to understand the requirements of the job. Secondly, a structured, competency-based interview (asking for specific examples of relevant behaviour in previous jobs) is acknowledged as having the broadest ‘validity’ or usefulness in the selection process (Hays, 2018).” Neither Stone (2017) or the Hay Group recruiting specialist advocate a necessity for understanding or defining specific employee interests and their relation to the workplace role as a means of determining person or organisation fit, as proposed by Holland (1997).

Gottfredson (1991) and Holland developed *The Position Classification Inventory* (PCI) as an alternative to the industrial engineering approach to job analysis recommended by Stone (2017). Their intention was to create a simple and dependable method of analysis for jobs and occupations based on the Holland RIASEC Model. Gottfredson (1991) argues that the PCI further demonstrates the usefulness of Holland’s Theory, *Making Vocational Choices*, and “the information about the psychometric virtues of the inventory reported in this manual provides more evidence of the theory’s validity and usefulness” (Gottfredson 1991, p. iii). The PCI process is based upon the completion of the *PCI Item Booklet* (Gottfredson, 1990), which contains eighty-four questions which prompt assessment of tasks, abilities, personal characteristics, perspective and personal styles associated with the occupation or job being classified. The output of the process, which is conducted by incumbents, supervisors and specialists familiar with the occupation or job requiring classification, is a two or three-letter RIASEC code which can be compared a candidate’s StandardSDS Summary Code. Internal consistency reliability coefficients for the PCI scales range from .71 to .91 for incumbents and supervisors participating in the development of the PCI and there was very high agreement between classification codes derived using PCI when compared with the *Dictionary of Holland Occupational Codes (DHOC)* Gottfredson (1996). The PCI is used for updates of the *StandardSDS Occupations Finder*, and by individuals who desire to create or double-check a RIASEC code for new or existing positions.

Organisational, personnel and vocational theory collectively and independently, to a large degree, focus on the contribution and alignment of employee interests, skills and behaviours to their workplace role and organisation. The quality of person-job fit and person-organisation fit directly impacts the employee’s satisfaction, willingness to learn and increase competencies and ultimately the employee’s engagement and willingness to remain employed. Employee engagement, skills and retention, a key contribution to an organisation’s intellectual property, are directly related to the productivity of the organisation. This flow and inter-relation of organisational and vocational attributes can be separated into Inputs and Outputs and displayed as an Interest-Productivity Model in Figure 3.

Elements and links on the Input side of the Interest-Productivity Model are useful for describing Employee Fit and as focal points for investigation of the research question. Employee FIT which is defined here as employee job-fit and employee organisation-fit is an outcome of the six linking attributes on the Input side of the model. Employee's knowledge of Self (Interests) is a key input and represents an employee's understanding of their interests, as defined by Holland (1997). A second Input attribute, organisational (and employee) understanding of the inherent interest profile of workplace roles, defined as the environment by Holland (1997), enables the employee to make an informed choice of job, a 3rd Input, and matching of employee to occupation by the organisation, a 4th Input attribute of the Model. In cases where a role evolves or changes or a good employee job-fit has not been achieved, the willingness of the organisation to adapt the role, based on an understanding of the employee also are contributing attributes to FIT.

Herzberg (1968) and Spector (1997) suggest the alignment of interests, 'the work itself,' is a motivating force in the workplace. FIT, specifically a high degree of employee job-fit is an intrinsic motivator which supports the manifestation of attributes on the Output side of the Interest-Productivity Model. A motivated employee working in a role of personal interest is motivated to increase their skills and competencies and engagement resulting in improved retention and productivity. These are key motivational factors in Herzberg's (1968) Two-Factor Theory, and Jim Clifton, Gallup CEO, explains, "Worldwide employee engagement is only 15%. What if we doubled that? What if we tripled it? Imagine how quickly that would fix global GDP, productivity and hence, human development"(Gallup, 2017). The Interest-Productivity Model Input attributes provide a framework for investigation of the research question and are discussed in Chapter 3. Research Method.

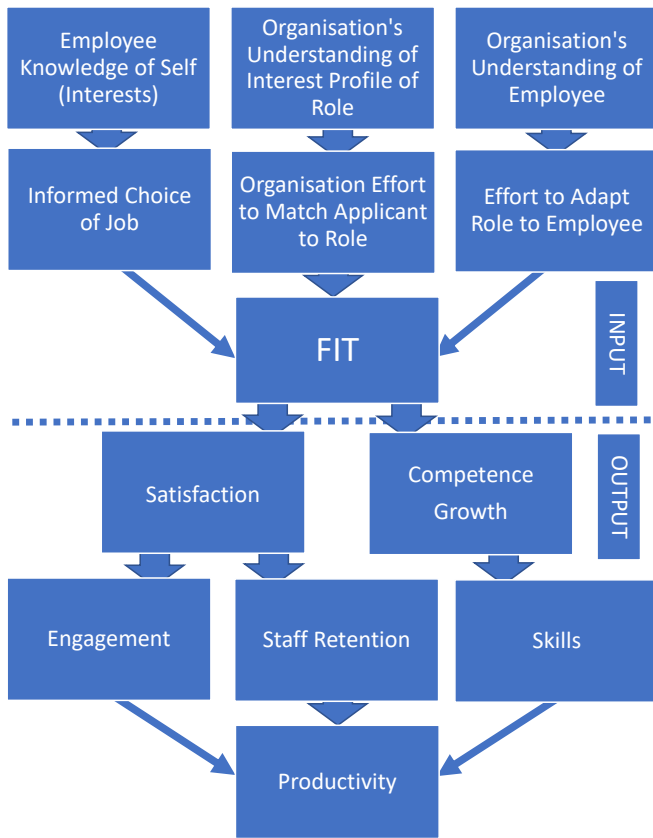


Figure 3 Interest-Productivity Model

Summary of the literature review.

The literature review has revealed inter-relationships and gaps between organisational, personnel and vocational theory. Investigation of literature regarding organisational theory and vocational theory supports consideration of employee interests as motivational factor, source of satisfaction and employee engagement which can lead to increased productivity. Review of literature regarding employee recruiting and assessment practices advocated within personnel theory supports a requirement for organisations to understand and align employees with roles and organisation to achieve fit in order to better achieve strategic objectives and performance. The literature indicates that vocational theory and practices also advocates person-job fit and person-organisation fit through pairing of vocational personalities and occupations based on assessment of employee interests. Research papers on the application of vocational theory to personnel recruitment and job-fit are limited, but literature review

of educational material and journal articles regarding Human Resource Management in New Zealand, relegate interest assessment, as advocated by Holland (1997), to the career development domain. This literature review has confirmed a gap between vocational and personnel theory and application of vocational theory to employee selection and placement; sufficient provocation for investigation of the research question.

Chapter 3. Research method

Research Design Introduction

Ideally, a longitudinal, quantitative study would have been undertaken to compare outputs of the Interest-Productivity Model; productivity, satisfaction, retention and skills for an experimental group of employees who enjoy congruent person-job fit, as defined by Holland's RIASEC Model, against a control group who enjoy ad hoc person-job fit. Unfortunately this approach is not within the scope of a master's degree thesis.

Instead, a snapshot study of twenty-six participants at five New Zealand workplaces has been conducted, a legitimate investigation in its own right, to assess the potential contribution toward improved employee fit and productivity afforded by the application of Holland's RIASEC Model in the New Zealand workplace.

In Chapter 2 the Interest-Productivity Model was used to outline the relationships that enable interests to contribute to productivity. The model provides a basis for establishing key assumptions that will be tested in order to answer the Research Question posed in Chapter 1. This chapter outlines the methods used to test these assumptions and the mixed-method research approach; (a) categorisation of qualitative concepts derived from participant interviews and (b) development of quantitative data derived from Iachan Agreement Index calculations for Likert Scale questions, StandardSDS Summary and Occupation Code comparisons, and Wilcoxon Signed Rank Test.

Mixed-method Research

A mixed-method, cross-sectional field study research design was undertaken using semi-structured interviews and the Self-Directed Search, an interest inventory based on Holland's (1997) RIASEC model and responses to questions using a Likert scale.

Quantitative and qualitative data were gathered from 26 participants, representing five different organizations. Participant's supervisors were also interviewed. Each participant's Self-defined interests code is compared with their StandardSDS Summary Code for congruency using the Iachan Agreement Index (Iachan, 1984). The StandardSDS Summary Code is also compared for congruency with the Occupational Code for their workplace role.

The semi-structured interview process and Self-Directed Search assessment review have provided additional data for analysis using aspects of the grounded theory approach (Bell, 2019). The data was analysed to identify recurrent concepts which were then categorised. The relationships between categorical evidence and the research question and its attributes were explored to determine level of support for Holland’s RIASEC Model (Theory).

Figure 5 shows the Interest—Productivity Model, first introduced in Chapter 2. In order to investigate the question of whether the Holland RAISEC Model is useful in the New Zealand context, the Interest—Productivity Model was used to identify key assumptions that could be tested in this research project. Assumptions are numbered on the Interest—Productivity Model and then expanded on in the associated table.

No.	Assumption	Method
1	Employees have insufficient knowledge of interests to make informed choices.	Qualitative: Interview with employees Quantitative: <ul style="list-style-type: none"> Iachan Agreement Index for Likert Scale Responses to Interview 2; Questions 9 & 10 Wilcoxon Signed Rank Test of Likert Scale Responses Iachan Agreement Index comparing Self-Defined RIASEC with StandardSDS Summary Code
2	Organisations have insufficient knowledge of employee interests and interest profile for role(s) to match employees and roles.	Qualitative: Interview with employees and interviews with supervisors
3	Management can create conditions for better fit when they understand employee interests and the interest content of jobs.	Qualitative: Interview with employees and interviews with supervisors.
4	Employees experience better job fit when they have made informed choices.	Qualitative: Interview with employees Quantitative: <ul style="list-style-type: none"> Iachan Agreement Index for StandardSDS Summary Code & Occupation Code for employee Likert Scale response for Interview 2; Questions 11 & 13
5	Managers see an important connection between fit and productivity.	Qualitative: Interview with supervisors regarding Interest-Productivity Model

Table 3 Research Assumptions & Evaluation Method

Assumption #1 is that RAISEC feedback will provide employees with information they would not otherwise have, enabling them to make more informed choices about their jobs, thus contributing to better fit. The RAISEC feedback would be of limited value if employees already had a good understanding of their interests prior to undertaking the Self Directed Search and receiving feedback. This assumption was tested using both qualitative and quantitative data, as will be explained later in this section.

Assumption #2 is that supervisors do not have sufficient knowledge of employee interests to match employees with roles or to adapt roles to better suit employee interests. If supervisors intuitively understand interests and use this understanding to create fit, there would be little need for RAISEC feedback. This assumption was tested using qualitative data from interviews with supervisors.

Assumption #3 is that supervisors can take more effective actions to generate fit when they have a better understanding of employee interests and the interest profile of roles. One way the RAISEC model can be useful is by enabling supervisors to take effective action. To test this assumption, qualitative data was gathered in interviews with supervisors, in which they discuss the value of the information generated by the process and ways they might use the insights gained.

Assumption #4 is that employees will experience better fit when they make informed choices; in particular, choices informed by a knowledge of their own interests. This was tested with quantitative and qualitative data relating to choices made about their current work.

Assumption #5 is that managers see an important connection between fit and productivity. For the RAISEC model to be useful in the New Zealand context, managers in New Zealand organizations need to see that there will be a benefit from investing in the process. Because of the range of variables impacting on productivity the relationship between fit and productivity is difficult to establish empirically. Instead this assumption is tested by gathering qualitative data from interviews with supervisors in which they consider whether their experience of the process and the logic of Interest—Productivity model convinces them that there is a connection that is important to their organization.

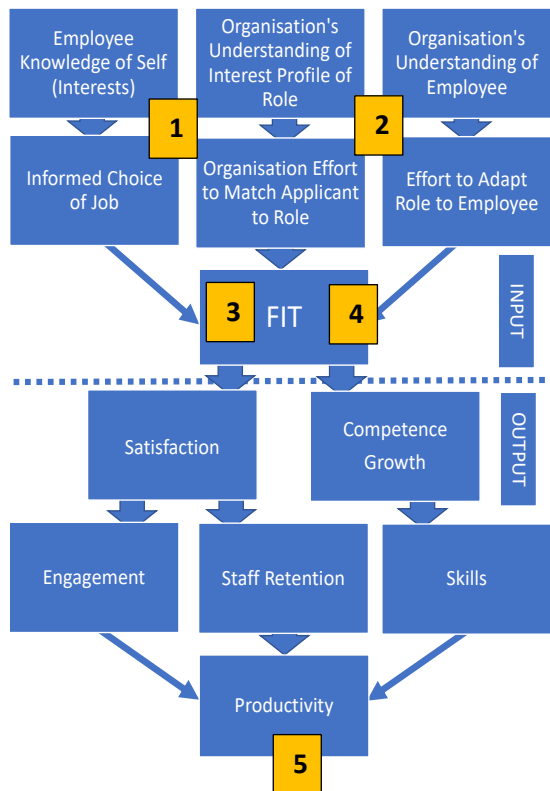


Figure 4 Interest-Productivity Model & Research Method Assumption Points

Pre-Interview Preparation and Information Distribution

An Information Sheet describing the research project and a Participant Consent Form were created and distributed in accordance with Massey University Ethics Committee principles and process. The Participant Consent Form provided participants with approval options for; sound recording of the interview, return of interview recording to the participant and agreement to participate in the study under conditions set out in the information sheet. Only one of the twenty-six participants did not agree to have the interview recorded and the remainder did not request return of the recording.

Participants were asked, and agreed to sign and date their declarations of consent prior to commencement of the first interview.

Participant & Workplace Role Selection Process

The suggestion of personal interviews conducted by an unknown researcher about their interests, quality of job-fit, beliefs and workplace environment could have easily provoked a negative response from potential participants for the study. It was imperative to establish a sense of trust among potential employees at workplaces. The most expeditious approach utilised existing networks of Massey Supervisors and the researcher. Two Primary schools and a Private Training Enterprise PTE were easy

choices because the researcher had assisted the PTE manager with a successful employee intervention using the Holland RIASEC model and the primary schools were highly trusted contacts of one of the Supervisors and the researcher's wife. Senior managers at two manufacturing companies, the fourth and fifth workplaces, are past business associates of the researcher. Even though the initial contacts were made on the basis of personal relationships, the researcher had existing relationships with only four of the twenty-six participants who took part in the study.

The organisation contacts of the researcher and Massey Supervisor were responsible for introducing and securing approval for conduct of the study at each organisation. They also played a key role for establishing the required level of trust among voluntary participants. A decision was under-taken at the two manufacturing companies to restrict the interviews to staff-level participants in order to avoid any potential issues that might arise if hourly-waged staff participated. A mixture of hourly and salaried participants was preferable but problematic due to potential perception of detrimental outcomes from shared interview information.

The researcher and Massey Supervisor were responsible for supporting representatives at each organisation with the distribution of the research study Information Sheet and Consent Forms to participants. Coordination of interview times, dates, and a private location to ensure privacy during the interviews was facilitated by organisation representatives as well. Organisation representatives were asked to select participants who represented a cross-section of workplace roles. Target date for completion of interviews was 8 August 2021, three months prior to master's thesis submission deadline of 8 November 2021. The deadline was missed due to the Covid-19 Alert, and interviews at the fifth workplace were rescheduled and completed on-line by 17 September 2021, six weeks behind schedule.

Research Procedure

In order to test the assumptions described earlier, participants went through a procedure involving collection of both quantitative and qualitative data, and where they were able to reflect on the value of the information they were getting. The procedure is shown in Figure 6 below. In the section that follows each step is discussed in more detail, including explanation of key processes involved in the use of the RAISEC model.

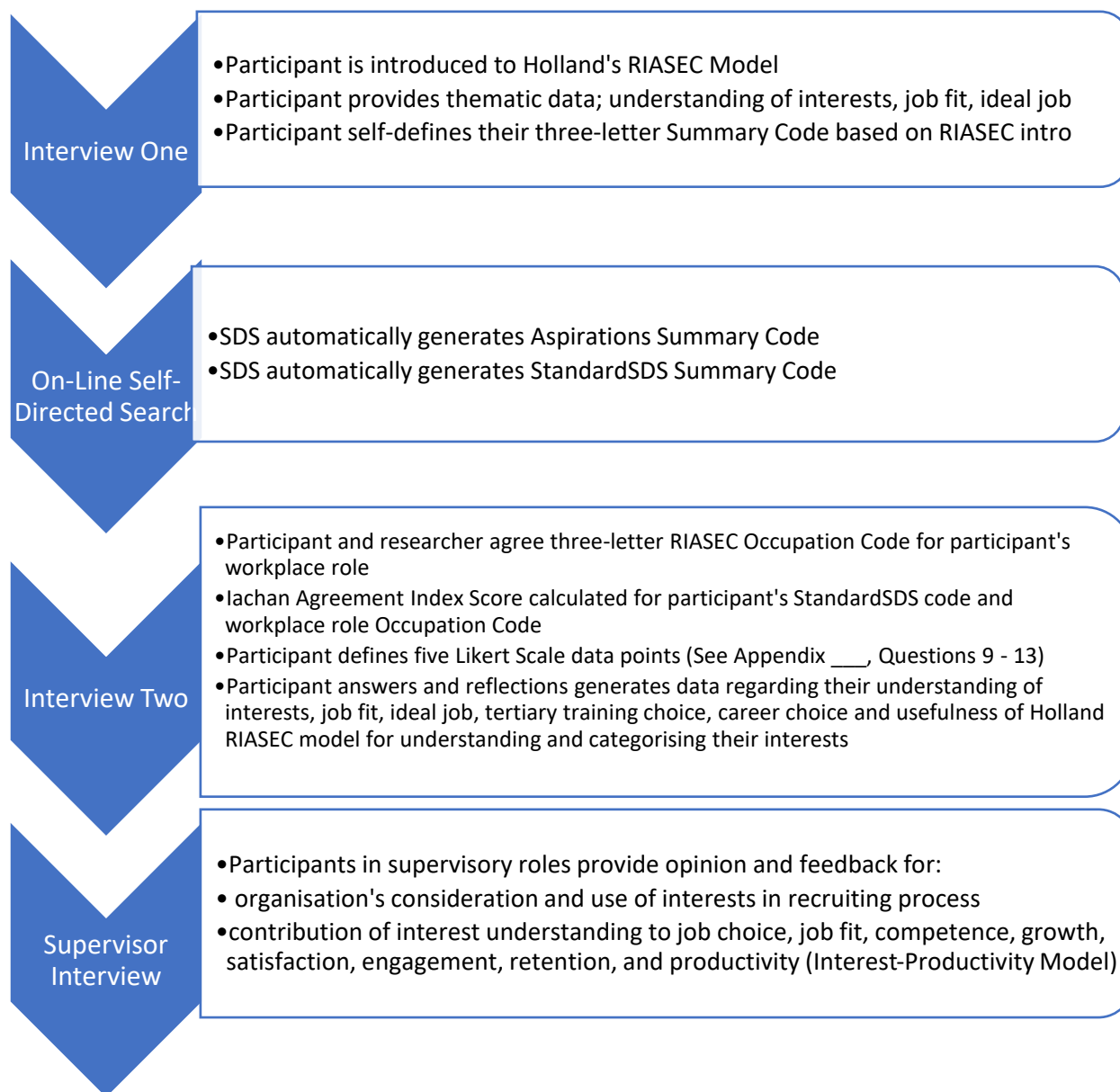


Figure 5 Research Procedure & Data Collection Process Flow Diagram

Interview One

The first interview consisted of thirteen open-ended questions (See Appendix Two) designed to test the Interest-Productivity Model assumptions. The interview was followed by instructions for completion of the StandardSDS, Self-Directed Search Inventory, (SDS), a career assessment and exploration tool that matches aspirations, activities, and talents to potential occupations and educational choices. The researcher provided an informal introduction and review of the interview process and assurance of anonymity for the participant as well as an opportunity to ask any questions about the process or reporting of the thesis prior to the questions. Written permission for participation in the interview, as

set out in the study Information Sheet, and permission to record and receive copies of the interview recording was requested prior to beginning the question portion of the interview.

The thirteen questions were designed to inspire reflection and elicit responses by each participant about their personal interests, inherent interests of their workplace role, what role their interests played in their job choice, and definition of an ideal job. Each participant was asked to self-define a three-letter RIASEC code to characterise their interests, following a description and comparison of their interests with the six different types described in the Holland RIASEC Model. An example of a Self-Defined RIASEC code, derived from discussions between the researcher and a participant is shown in Figure 6.

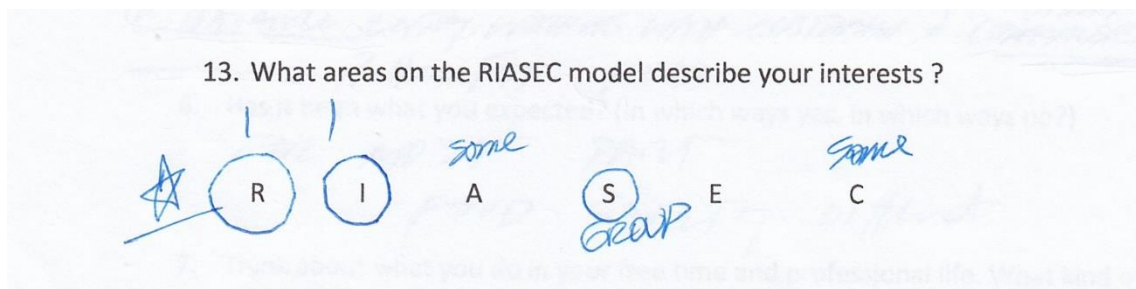


Figure 6 Example of Self-Defined Three-Letter RIASEC Code

The time required to complete Interview One was approximately one hour. Interviews One and Two were conducted in-person, at the participant's place of work in a private setting to support the participant's privacy and anonymity. (Exception was the final organisational interviews which were conducted on-line due to Covid-19 alert)

On-Line Self-Directed Search

The StandardSDS Self-Directed Search (SDS) Assessment was completed on-line at each participant's discretion prior to Interview Two. Completion of the SDS inventory took approximately twenty minutes. Results were provided in an automatically-generated report, which includes a personalised Summary Code, a three letter code based on Holland's RIASEC model, an Aspirations Summary Code, and a list of occupations and fields of study associated with the participant's Summary Code and Aspirations Summary Code.

Interview Two consisted of eight open-ended questions and five closed questions in a Likert Scale format (See Appendix Two). The purpose of this follow-up interview was to elicit participant response to the StandardSDS assessment experience and report. The researcher, a certified career development counsellor, provided interpretation of the summary code and suggested occupational choices and an explanation of the Occupational Code. The participant was asked to compare their StandardSDS Summary Code with their self-defined RIASEC code and to comment on the usefulness of the Summary Code for describing and categorising their interests, defining the level of congruency, or job fit, with

the Occupation Code for their workplace role. The researcher assisted the participant with the comparison including a calculation of congruency using the Iachan Agreement Index, (See Figure 9).

The Iachan Agreement Index (Iachan, 1984) provides a method for calculating agreement, or congruency, between two three-letter codes. It was used to provide participants with information on the degree of agreement between their interests and workplace role for discussion purposes during Interview Two. Each participant’s StandardSDS Summary Code was compared with the RIASEC code for their occupation. Iachan (1984) developed and evaluated a method for measuring agreement for partially ordered data and applied it to the Self-Directed Search and argued its superiority to the Zener-Schnuelle index, originally promoted by Holland in 1979. The Iachan Agreement index is recommended for congruency assessment by Holland (2017). Each of the three letter codes are compared and an Agreement Score is calculated. The first letter position is weighted (22) more highly than the second letter code (10) which is more highly weighted than the third letter (4). A maximum score of 28 is achievable if all three letters of a Summary Code match, in order, the three letter code for the Occupation. (see Table 4. and Figure 3,) for examples of the Agreement Index calculation using StandardSDS Summary Code and Occupation Code, (Holland, 2017).

TABLE 1
Illustrative Weights for Assessing Agreement
between Two Three-Letter Codes

Vocational choice code (judge 1)	SDS summary code (judge 2)		
	First letter	Second letter	Third letter
First letter	22	10	4
Second letter	10	5	2
Third letter	4	2	1

Figure 7 Iachan Agreement Index Weightings for SDS Three-Letter Code (Iachan, 1984,p.135)

StandardSDS Summary Code	StandardSDS Occupation Code	Iachan Agreement Index Value	Iachan Index Percentile (Adult Male)	Iachan Index Rank
SEI	SEI	22+5+1 = 28	99	HIGH
SEI	SIE	22+2+2 = 26	91	HIGH
SEI	ESI	10+10+1 = 21	59	AVERAGE

SEI	IES	4+5+4 = 13	44	AVERAGE
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Figure 8 Iachan Agreement Index Between Summary & Occupation Codes

The Iachan Agreement Index is used to calculate congruency between any pair of three-letter SDS Summary Codes. The Iachan value is used to determine a percentile ranking (See Table B.3). Scores greater than the 85th percentile are regarded as a High level of congruency, Average congruency is attributed to scores between 16th to 85th percentiles, and Low congruency for scores lower than the 16th percentile, (Holland, 2017).

Iachan Agreement Index Calculation for StandardSDS Summary and Occupation Codes (Example)

	StandardSDS Summary Code (2 nd & 3 rd Letters are tied)			
StandardSDS Occupation Code Office Supervisor	S	E,C	E,C	No Match
S	22	10	4	0
E	10	5	2	0
C	4	2	1	0
Agreement	22+	5+	1	28
Percentile	99th	Rank	HIGH	

Figure 9 Iachan Agreement Index Calculation for StandardSDS Summary and Occupation Codes

Each participant was asked to comment on the role their interests played in selecting their workplace role, decisions for additional workplace training and development and potential for re-engineering of their role to better suit their interests.

Interview Two was complete after each participant provided a response to the five, final questions where a Likert scale was utilised to quantify each response. (See Appendix One – Likert Scale Questions)

How do you rate the following ?

9. Knowledge of your own interests prior to these Interviews:
10. Knowledge of your own interests after using RIASEC
11. Quality of your current job choice
12. Extent to which you understood the nature of your current job at the time of application
13. Experience of Your Interests and Fit with current job

Comparison of the answers to question # 9 & # 10 provide a data point for estimating a response to research question (1) alignment between each employee's self-defined interests and the StandardSDS Summary Code. The answer to question # 13, along with the participant's StandardSDS Summary Code and Occupation Code congruency calculation provides data to respond to research question (2) alignment of employee's self-defined and predicted interests with the O*NET Occupational Code, (for their workplace role).

Supervisor Interview and Employee Interest-Fit-Productivity Model

A supervisor interview was conducted for participants who have direct reports. Questions in the supervisor interview focused on employee interests, retention, recruitment process, workplace role definition and alignment, and motivation (See Appendix Two). Supervisors were asked to comment on the Interest-Productivity Model's depiction of the inter-relationships and contribution of employee interest and job-fit to workplace productivity, as well as the usefulness of the Holland RIASEC Model for defining employee interests and job-fit. The Supervisor Interview consisted of eleven open-ended questions followed by a review of the Interest- Productivity Model.

Taken together, the data collection process generated five sources of data:

1. Participant's Self-defined Interest Code from Interview One
2. Participant's StandardSDS Summary Code provided within each participant's StandardSDS report following completion of the SDS.
3. Occupational Code for participant's workplace role from StandardSDS Occupations Finder or O*NET database as agreed by participant in discussion with researcher
4. Participant's response to Interview Two questions 9 – 13 (Likert Scale)
5. Participant's response to questions and voluntary reflection during Interviews One, Two, and Supervisor Interview, including response to the efficacy of the Interest-Productivity Model

Data Analysis

Data analysis is focused on measuring quantitative and qualitative data generated by research methods established to investigate key assumptions associated with the research question as portrayed in the Interest—Productivity Model. Conduct of data analysis associated with research methods is described below:

No.	Assumption	Method	Data Analysis
1	Employees have insufficient knowledge of interests to make informed choices.	Qualitative: Interview with employees Quantitative: <ul style="list-style-type: none"> Iachan Agreement Index for Likert Scale Responses to Interview 2; Questions 9 & 10 Wilcoxon Signed Rank Test of Likert Scale Responses Iachan Agreement Index comparing Self-Defined RIASEC with StandardSDS Summary Code 	<ul style="list-style-type: none"> Qualitative concepts regarding Employee Knowledge of Self (Interests) derived from responses and discussion during Interviews One, Q 8&9 and Two, Q 3&4. Iachan Agreement Index compares each participant's Aspiration Code with their StandardSDS Summary Code. Congruence between Aspirations and Summary Codes indicates stable systematic thinking about interests and career possibilities (Holland, 2017) Iachan Agreement Index calculation compares participant's StandardSDS Summary Code with participant's Self-Defined RIASEC code. Level of congruence demonstrates clarity of participant's understanding of interest prior to taking the Self-Directed Search Wilcoxon Signed Rank Test of Likert scale answers to Interview 2, Questions 9 & 10, defines significance of interest understanding change resulting from Holland's SDS assessment.
2	Organisations have insufficient knowledge of employee interests and interest profile for role(s) to match employees and roles.	Qualitative: Interview with employees and interviews with supervisors	<ul style="list-style-type: none"> Qualitative Concepts regarding Organisation's Understanding of Employee and Effort to Adapt Role to Employee from Interview Two, Q 5,6,7 Qualitative Concepts regarding Organisations Understanding of Interest Profile of Role and Effort to Match Applicant to role from Supervisor Interview, Questions 4-8 Participant and researcher reviewed Occupation Codes generated by StandardSDS and O*NET database and agreed on an Occupation Code matching the participant's workplace role. This is an input for quantitative analysis of employee job-fit.
3	Management can create conditions for better fit when they understand employee interests and the interest content of jobs.	Qualitative: Interview with employees and interviews with supervisors.	<ul style="list-style-type: none"> Iachan Agreement Index, a measure of the level of congruency between each participant's StandardSDS code and the Occupation Code for their workplace role. Qualitative Concepts regarding Organisation's Understanding of Employee and Effort to Adapt Role to Employee from Supervisor Interview, Questions 8 & 9.
4	Employees experience better job fit when they have made informed choices.	Qualitative: Interview with employees Quantitative: <ul style="list-style-type: none"> Iachan Agreement Index for StandardSDS Summary Code & Occupation Code for employee Likert Scale response for Interview 2; Questions 11 & 13 	<ul style="list-style-type: none"> Qualitative concepts regarding Employee Fit with Workplace Role - Interview 2, Questions 3&4 SDS Summary Code Accuracy Iachan Agreement Index, a measure of agreement between each participant's StandardSDS code and the Occupation Code for their workplace role, indicates job-fit. Spearman's Rank Order Correlation for Iachan job-fit (above) correlates with self-defined job fit; Interview 2, Question 13. Comparison of Likert responses Interview Two, Q 11&13 for interest-fit and job choice and Cronbach's Alpha for internal consistency of Q 11,12,13 regarding interests.
5	Managers see an important connection between fit and productivity.	Qualitative: Interview with supervisors regarding Interest-Productivity Model	<ul style="list-style-type: none"> Qualitative concepts regarding Supervisor Reflections on Validity & Usefulness of Model

Table 4 Data Analysis Process

Thematic Analysis

Bell (2019) explains the analysis of qualitative data is most often conducted using a Grounded Theory approach. Researchers analyse data for salient and recurring, discrete phenomena which are designed at concepts according to Bell (2019). A concept is expanded, or perhaps combined with other similar concepts into a category, and systematically related categories may form the framework for a theory.

Braun and Clarke (2006) provide a 6-step framework for thematic analysis that involves: becoming familiar with the data; generation of initial codes; searching for themes; reviewing themes; defining and naming themes; and writing a report.

This process can be followed in a variety of ways. Initially a deductive approach was taken, comparing data with the categories suggested by the Interest—Productivity Model. Themes identified were related to specific assumptions derived from the model.

An effort was also made to use an inductive approach, where the researcher's interpretation of ideas that were present in the data suggested further codes. The researcher and supervisors recognized that the nature of the data gathered in this study did not lend itself to an inductive approach.

Ethics Considerations for proposed research

A Review of Massey University Code of Ethical Conduct for Research, Teaching and Evaluations Involving Human Participants was undertaken by the researcher. Potential ethical issues and mitigation were identified by the researcher and reviewed with the researcher's supervisors.

A Human Ethics Application Risk Assessment Form for the proposed research was completed and approved as low-risk.

Ethics considerations that were addressed during the conduct of the research are included: enabling informed consent by providing a brief description of Holland's RAISEC theory prior to Interview One; ensuring confidentiality and anonymity of participant data; providing managers with an overview of study results; and providing individual participants with information on how to improve alignment in their role.

Chapter 4. Results

The presentation of results and findings of the study are organised in accordance with the research question and the assumptions as outlined in Chapter 3, Research methods. Quantitative data consists of ordinal data derived from Likert Scale responses to interview questions, and Iachan Agreement Index scores derived from comparison of each participant's StandardSDS assessment results or comparison with one of participant's Likert Scale responses. A Wilcoxon Signed Rank Test and Spearman's rho correlation analysis was conducted with mixed results. Qualitative data is derived

from coded and categorised concepts which emerged from interview discussions and subsequent actions taken by participants. The quantitative and qualitative results are organised and presented within corresponding sections of the Interest-Productivity Model and assumptions.

Participants

Twenty-six employees at five different workplaces participated in the study conducted from June to September 2021. The mean age of participants was 41.6, ranging from 24 to 60 years. A national Covid-19 alert required six additional weeks to complete the interviews. Interviews at the sixth organisation were conducted, individually, on-line using MS Teams. The remaining nineteen participants were interviewed in person. Interviews were recorded and transcribed for twenty-five of the twenty-six participants. The twenty-sixth participant permitted the researcher to make notes during the two unrecorded interviews. All twenty-six participants took the Standard Self-Directed Search, StandardSDS, inventory, on-line, at the PAR, Inc. website. Reports were provided directly to each participant and researcher following completion of the inventory.

Participant’s workplace roles range from Caretaker to Principal and Managing Director in the school and PTE samples which included teachers, Team Leads and Office Administrators. Manufacturing company roles range from Maintenance Service Manager to General Manager and include HR, Operation, Health and Safety and Technical Engineering positions. Ethics considerations resulted in a decision to omit hourly, wage-based roles from the study at the manufacturing companies.

Twenty-four of the participants were identified prior commencement of workplace interviews and two participants spontaneously volunteered to participate when they were made aware of the study at their workplace.

Participants	School / PTE	Manufacturing	Female	Male	Average Age
26	15		12	3	45
		11	4	7	38

Table 5 Summary of Participant Age, Gender & Workplace

Employee reaction to the study was mostly enthusiastic and positive. They were ready and willing to share personal and private observations about their study, career choices, employment situations, interests, doubts and recommendations about the subject matter. Open-ended questions inspired reflection and considered responses from many of the participants. Several of the participants who were not as openly enthusiastic appeared to be either introverted types or having a highly analytical personality. They were hesitant and considered about their responses, and appeared to have difficulty with questions that required a personal commitment or assessment such as picking a three-letters from the six RIASEC types for their Self-Defined RIASEC code. Responding to interview questions about the degree of accuracy for their StandardSDS Summary Code or its congruency with their occupation

code seemed slightly daunting, which represents a potential short-coming of the research method. Advance presentation of interview questions may be a solution.

INTERVIEW 2 – LIKERT SCALE RESPONSES TO QUESTIONS #9 - #13					MEAN	STD.DEV	VARIANCE
9. Knowledge of your own interests prior to these Interviews:					3.577	.743	.552
Not at all clear	Not so clear	Somewhat clear	Very Clear	Extremely Clear			
1	2	3	4	5			
10. Knowledge of your own interests after using RIASEC					4.635	.471	.222
Not at all clear	Not so clear	Somewhat clear	Very Clear	Extremely Clear			
1	2	3	4	5			
11. Quality of your current job choice					4.231	.697	.485
Very Poor	Poor	Fair	Good	Excellent			
1	2	3	4	5			
12. Extent to which you understood the nature of your current job at the time of application					3.923	.549	.302
Completely misunderstood	Somewhat misunderstood	Somewhat understood	Mostly understood	Completely understood			
1	2	3	4	5			
13. Experience of Your Interests and Fit with current job					4.000	.784	.615
Very Poor fit	Poor fit	Fair fit	Good fit	Excellent fit			
1	2	3	4	5			

Table 6 Descriptive Statistics for Likert Scale Responses - Questions 9 & 10

Iachan Agreement Index Comparison Variables	N	MEAN	STD.DEV	VARIANCE	Percentile M-F	Percentile Ranking*
1. Comparing StandardSDS Summary Code to Occupation Code - Total	26	23.53	6.209	38.556	71-75	Average
2. Comparing StandardSDS Summary Code to Occupation Code - PTE/School	15	24.667	5.134	26.356	88-89	High
3. Comparing StandardSDS Summary Code to Occupation Code - Manufacturing	11	22.000	7.148	51.091	65-70	Average
4. Comparing StandardSDS Summary Code to Self-Defined RIASEC Code	26	22.654	6.989	48.842	65-70	Average
5. Comparing StandardSDS Summary Code to Aspiration Code	26	21.269	6.774	45.889	59-63	Average
6. Comparing StandardSDS Summary Code to Aspiration Code (GM,MDs,Principal)	4	19.750	6.534	42.688	56-58	Average

Table 7 Descriptive Statistics for Iachan Agreement Index Comparisons

(* High (>85th percentile), Average (16th to 85th percentile) or Low (<16th percentile) Holland, Messer (2017))

Participant	Self_Defined_RIASEC_Code	SDS_Aspiration_Code	SDS_Summary_Code	Iachan_Index_Self-Defined_RIASEC_SDS_Summary_Code	StandardSDS_Occupation_Code	Q9_Interest_Understanding_Before_RIASEC_Likert	Q10_Interest_Understanding_After_RIASEC_Likert	Likert_Q11_Quality_Job_Choice	Q12_Extent_to_which_you_understood_the_nature_of_your_current_job_at_the_time_of_application	Q13_Interests_Job_Fit	Iachan_Agreement_Index_StandardsSDS_Summary_Code_to_Occupation_Code	Iachan_Index_Self-Defined_RIASEC_to_SDS_Code	Iachan_Index_SDS_Code_to_Aspiration_Code
1	SIA	AES	SAE	24	SAC	3	5	5	4	5	27	24	18
2	IS	SEA	SCE	10	ESC	2	4	4	4	4	16	23	24
3	SR	ESC	SCRE	24	SAC	3	5	4	3	4	24	27	16
4	RS	SER	RSEC	28	ESC	3	4	4	4	4	9	27	16
5	ERS	ESA	ESR	26	SEI	4	4	4	4	4	27	28	27
6	ESI	ESA	SEC	20	SEI	4	5	5	5	5	27	15	20
7	SE	SEC	SEC	27	SER	4	5	3	3	3	27	27	28
8	SEI	ESI	SIEC	26	SEI	3	4	4	5	4	26	26	16
9	SCI	ASI	CSIA	28	CSR	5	5	4	4	4	27	28	10
10	SIA	ESA	ESAC	28	ESC	4	5	4	4	4	28	11	28
11	RIASC	REC	RIASE	28	RES	3	4	5	4	5	28	28	24
12	RCES	ESR	SE	12	ESR	3	5	4	4	4	28	4	20
13	SEA	ESA	SAIEC	26	SEI	3	5	3	3	3	24	26	16
14	SCI	SEA	SCEA	27	SEC	3	4	3	3	3	28	24	24
15	RASC	SEI	SICE	4	SEC	3	5	4	4	4	24	4	26
16	ISEA	ESC	ESIC	12	ECS	4	5	4	4	4	26	13	28
17	EAS	ERI	ERI_S	23	ERI	4	4	5	4	5	28	23	28
18	SE	SEI	SEC	27	SEC	4	5	5	4	5	28	27	27
19	ESAE	ESI	E,CIS	27	SEI, EC	5	5	5	4	5	21	24	25
20	IRS	IRE	IACES	24	IEC	4	4.5	5	4	5	28	23	23
21	ERIS	SEI	ERI	28	ECI	4	5	4	4	4	24	28	11
22	SIE	RES	ECS	14	ECS	3	5	4	4	4	28	23	11
23	SE	ESR	ESC	27	SIE	3	4	2	3	2	14	27	27
24	SE	SIE	SEAI	27	RIC	5	5	3	4	3	12	27	28
25	RIS	IES	RSE	23	ECR	3	4	3	5	3	14	24	4
26	IRSEC	RIC	RIC	21	RIC	4	5	4	4	4	22	28	28

Table 8 RIASEC Codes, Likert Scale Question Responses & Iachan Agreement Index Values

Assumption 1 - Employees have insufficient knowledge of interests to make informed choices

Interview One was a detailed exploration of the participant's understanding of their interests. Open-ended questions were employed to elicit each participant's response and encourage reflection on their understanding of interests, how the interests influenced their job choice and what difference, if any, exists between their workplace and leisure time interests. Holland's RIASEC Model was explained near the finish of Interview One and each participant was asked to characterise their interests by ranking the six RIASEC types in the order which might describe their interests. Some of the participants chose two of the RIASEC types and others chose more. The output is described as the participant's Self-Defined RIASEC code.

Quantitative analysis of Employee Knowledge of Self (Interests)

Likert scale response to Interview Two, Question 9, Knowledge of your own interest prior to these interviews has a mean of 3.577 for N=26, indicating an understanding mid-way between Somewhat Clear and Very Clear. The response to Interview Two, Question 10, Knowledge of your own interests after using the RIASEC (after taking the StandardSDS on-line assessment and participating in a discussion about the assessment outcomes during Interview Two) has a mean score of 4.635 for N = 26 (See Table 10. Descriptive Statistics for Likert Scale Responses). Comparing Q10 to Q9 mean scores yields a 29.57% potentially indicating an increased understanding of interests. This finding indicates support for assumption 1.

Wilcoxon Signed Rank Test:

An Exact Wilcoxon signed rank test for the Likert scale responses mentioned above showed a significant difference ($Z = -4.148$, $p < 0.001$) between scores given for self-understanding before RIASEC compared to scores given for self-understanding after RIASEC. The median score for after RIASEC was 5 compared to 3.5 for before RIASEC. Details for the rank test are listed in Appendix 5). This finding indicates support for Assumption 1.

Iachan Agreement Index: StandardSDS Summary Code compared to Self-Defined RIASEC

The Iachan Agreement Index calculation comparing participant scores for three-letter, StandardSDS Summary Codes (automatically generated by the StandardSDS assessment) with three-letter, Self-Defined RIASEC Codes resulted in a mean score of 22.654 for N=26, with a standard deviation of 6.989. The Iachan Agreement Index value of 22.654 is interpreted as an Average percentile score of 65 for adult males and 70 adult females (Holland, 2017). This finding tends to support Assumption 1 if one may conclude that an Average, Iachan Rank, understanding of interests is insufficient to make an informed choice of occupation.

Iachan Agreement Index: StandardSDS Summary Code compared to Aspiration Code

The Iachan Agreement Index calculation comparison of participant StandardSDS Summary Code with a three letter Aspiration Summary Code resulted in a mean score of 21.269, for N=26, with a standard deviation of 6.774. The Iachan Agreement Index value of 21.269 is interpreted as an Average percentile score of 59 for adult males and 63 for adult females. A mean score of 19.750 for N=4, with a standard deviation of 6.534 was calculated for a group comprising four general manager level participants of the study, equating to an Average percentile score of 56 for adult males and 58 for adult females (Holland, 2017). A HIGH level of congruence between Aspiration and Summary Codes indicates stable, systematic thinking about interests and career possibilities (Holland, 2017). These findings indicate an Average, Iachan Rank, degree of stable, systematic thinking about interests and career possibilities by participants, which tends to support Assumption 1.

Qualitative concepts regarding Employee Knowledge of Self (Interests)

Concepts regarding employee understanding of interests are categorised and compiled in Tables 7&8. These concepts were derived from responses to questions from Interviews One and Two.

Associated first-order Concepts	Representative Quotations from Participants
Interview 1 Question 8: Did you seriously consider your interests when you applied for your current role or other jobs? N = 26 Response Tally 9 “Don’t Know or No” 14 “Yes”	Don’t Know or NO
	1. “Absolutely not. It was a very directive job description that you’re applying for. No. I didn’t have an interview, it was just purely the application and you found out.”
	2. “No. It was all I wanted to do. Is teaching an interest?”
	3. “Mrs. Jones was my favourite childhood teacher. Decided I want to be like her.”
	4. “ Didn’t want job. Tapped on the shoulder”
	5. “I think I know what I don’t like to do.”
	YES
	1. “Yes. I think I did. Because I thought about what I enjoy doing”
	2. “Yeah. I did.”
	3. “Yes. Working to support the local community.”
4. “Yes. Definitely.”	
Interview 1 Question 9: How do you know what your interests are?	1. “It makes me happy and what I enjoy doing”
	2. “I don’t think it’s intuitive. I think who I want to be is based on my parents.”

N = 26 Response Tally 7 “Don’t Know” 5 “Parental Influence” 7 “Doing things I like” 5 “Evolved / Intuitive”	3. “Parental influence initially. Influence of local church minister.”
	4. “Support, Help, Assist People”
	5. “At this point, I mean, I’m thirty-two, you just get to a point where you know what you like, right?”
	6. “Saw dad going to work every day. Enjoy helping people, engineering problems, fixing things.”
	7. “I think in a sense over the different roles I’ve had a fall, have fallen into areas that I’ve found.”
	8. “I think they’ve just evolved.”
	9. “Said to me, put on a page what you want to do...Like what do you, what do you like? What do you not like? Made me reflect. First time I thought about it.” (referring to recommendation from prior boss.
	10. “I always knew I wanted to be an engineer.”

Table 9 Qualitative Concept Summary - Employee Knowledge of Self (Interests)

Two participants provided detailed accounts of their experiences that illustrate the benefit they could see in using Holland’s RIASEC Model to define interests and improve tertiary education and occupation choices:

During Interview One, while exploring the six different vocational personality types of Holland’s RIASEC Model, one of the participants stated they had an epiphany when they identified the difference between Conventional and Enterprising-Social typologies;

Yeah. Yeah. I saw the numerical (Conventional type attribute), and I was like, I wish I knew this at college. It would have saved me so much on my student loans. Twenty K on my student loan, if I’d known this information earlier.

Having completed an Accounting degree at university several years earlier and currently employed as a teacher, the participant recognized they had probably completed a major that was unaligned with their interests, an assumption later confirmed by their StandardSDS Summary Code.

Another participant concluded that a better understanding of their interests would have resulted in a different university major and career choice. After completing their secondary education they were accepted for study towards a tertiary degree in Pharmacology at Otago University. At the last minute they changed their major to an alternate choice:

And I was just fresh out of school was like, I want to do something that’s fun and interesting. Let’s do art. And I’ll take a bunch of random interesting papers. Stupid. Probably could have helped me to say yes. To my acceptance into that program. Yeah. I’m really looking forward to showing my husband the pharmacy thing. He’s gonna find it hilarious. He’s gonna be like his area is gonna be like you could have been making so much money. What are you doing?

The findings in this section provide additional support for Assumption 1; almost half of the participants indicated they did not understand or consider their interests when they applied for their current job.

Qualitative concepts regarding Employee Knowledge of Self (Interests)

Additional concepts derived from Interview 2, Questions 3 & 4 regarding participant’s responses their Standard SDS Summary and Occupation Codes and usefulness of Holland’s RIASEC Model to support more informed choices.

Associated first-order Concepts	Representative Quotations from Participants	Researcher Clarifications
Interview 2 Questions: 3. Did your results (Standard SDS Summary Code) resonate with you and seem accurate? N = 26 Response Tally Q5 21 Yes 5 Partial	1. “Yes. Makes Sense”	
	2. “Yes and No. O*NET Occupation Code suggests I’m in the wrong role, but SDS (Occupation Finder) database suggests a good match.”	
	3. “Yes. Pretty much bang on! Wow! So I knew what I wanted to do before I realised that I knew that was me! That's cool. That's very cool. 100% believable.”	This participant re-engineered their role two months prior to the Interview which increased the Iachan Agreement Index with their Standard SDS Summary Code from 55 to 99; Average to High level fit. Iachan Agreement Index resulted provided confirmation of re-engineering
	4. “Four-way tie. Wow! All-rounder!”	Iachan Index indicated a 99 percentile match for current role as well as a Daydream occupation as a pharmacist; a course of study the participant turned down after acceptance at Uni.
	5. “I was surprised when I saw that graph, that it wasn’t really one of the dominant ones. That’s interesting to look at the numbers, how I ended up as a teacher. It’s quite interesting how it sort of worked out. Yeah. And how the numbers match up.”	Participant ¹ decided to reconsider a potential decision to leave their current role for another, which scored lower on the Iachan Agreement Index. A career path toward a high level Iachan match as school principal was indicated as well.
	6. After reviewing the Iachan Agreement Index match at the 99th percentile, participant remarked, “to think that all the effort that I’ve gone through to get where I am today that it kind of is a match for what I’m doing. You know it’d be pretty, pretty hard if you looked at this and it wasn’t a match. Well then, I did make the right decision going into HR instead of law.”	
	7. “I’m not sure. Too much what to make of it, but my overall profile, that’s about right.”	O*NET Occupation code was a 99% match and SDS Occupation Finder code was a 59% match which raises a question about context for position classification calculation.
	8. “Yeah. Absolutely. That the profile makes perfect sense.	
	9. “Yes definitely.”	Participant predicted a 45 percentile agreement for Iachan Index and was correct. Process confirmed participant is in

¹ Personal pronouns, names and job titles have been changed throughout to ensure anonymity of participants

		the wrong role and is keen to re-engineer their position or move to another employer or self-employment.
	10. "A score out of ten. I'd give it an eight or a nine."	
	11.	Participant said the results of the RIASEC study confirmed alternative occupation which supported their intention to make a move within the next year
4. Did any results (StandardSDS Summary Code) seem inaccurate? (Which ones and why?) N = 22 Response Tally 18 No inaccuracy 4 Some inaccuracy	1. "No. Not after the explanation."	
	2. "Artistic was missing. (self-defined Investigative,Social,Artistic) Reaffirms requirement (for me) to get support for artistic activities since I scored low and I'm not good at creative things."	
	3. "Good to know where I should be. Excellent. 99% aligned now that I'm in a different role. Cool. It's good."	
	4. "I guess the focus on Conventional"	(wasn't expected based on their self-definition for the role)
	5.	O*NET and StandardSDS Occupation Finder code discrepancy. One calculation for Iachan Agreement indicated participant is in wrong role.
	6. "No position code for Continuous Improvement Manager."	
	7. "No. Not really. Very accurate. Yeah. Very good."	
	8. "Not accurate? No."	

Table 10 Interview Two Questions 3 & 4 SDS Summary Code Accuracy Responses

These findings indicate the RIASEC feedback has enabled participants to better understand their interests and to make better informed choices. Both outcomes support Assumption 1.

Assumption 2 – Organisation’s Understanding of Interest Profile of Role and Effort to Match Applicant to Role.

The degree to which the organization, as represented by supervisors who participated in the study, understood employee and inherent interests of workplace roles, was tested in two ways. Firstly, participants were asked whether supervisors, or the organisation in general, understood their interests. Secondly, supervisors were asked to describe the degree to which they understood and incorporated interests in selection processes.

Participants gave a range of answers that suggested they were unaware of the organisation’s position or that their organisation had a mixed understanding of employee interests or workplace roles. Participants also expressed their opinion about the organisation’s philosophy of matching employees to roles as part of recruiting or development processes. (See Table 9).

Qualitative concepts regarding Organisation’s Understanding of Interest Profile of Role and Effort to Match Applicant to Role

Associated first-order Concepts	Representative Quotations from Participants
Interview Questions: 5.How well do you think the company understands your interests? Why do you say so? N = 21 Response Tally Q5 5 Doesn’t 13 Does 3 Don’t Know	Organisation’s Understanding of Employee
	1. “Don’t understand my interests or my philosophy.”
	2. “Don’t know. There are no one-on-one discussions about it.”
	3. “The company probably undervalues my interests.”
	4. “Principal understands my skills.”
	5. “I think (MD) understands it pretty well.”
	6. “Yeah. That’s why they (Principal) gives me full reviews.”
	7. “Wouldn’t know.”
	8. “I think they do. Understand.”
	9. “I think there’s a pretty good understanding.”
	Effort to Adapt Role to Employee
6.How could the company make better use of your interests? 7.What value to you or the company would be created with a better understanding of your interests? N = 26	1. “Put me in the right role. I’m not interested in being a Team Lead.”
	2. “Provide tasks suited to my interests.”
	3. “I don’t know. They use me pretty well.”
	4. “Get to 99% match with role and gain greater effectiveness, efficiency and satisfaction.”
	5. “And the best thing is to have a good, you know, 99% or 91% number and know that you’re, you’re where you should be and then you don’t like you say, doubt yourself.”
	6. “People read your CV, answer a bunch of questions. You start in a new business and there’s no deep conversations or wide conversations around, more on a personal level. What can you bring to the business? They just appoint you and you carry on.”
	7. “I think they probably are at the moment.Yeah”
	8. “No. I don’t think so.”
	9. “I don’t know. I don’t know. Part of me just thinks that kind of the role, the role requires you to do certain things and be involved in certain things.

	Maybe if we had a discussion about what my interests are, and what you know, what I'm good at or what my strengths are, then we might focus more on doing things in those areas because I've got greater interest or capability."
	10. "I think I have quite high HR technical knowledge, which doesn't get used at all."

Table 11 Qualitative Concept Summary - Organisation's Understanding of Employee and Effort to Match Role to Employee

Associated first-order Concepts	Representative Quotations from Participants in Supervisory Roles (8)
Supervisor Interview: Questions 4 – 8 4.How do you define employee interests? 5.Where do employee interests fit from management's point of view? 6.How do you measure or consider employee-position alignment in practise? (skills, attitudes?) 7.Are interests considered as part of the employee recruitment process? 8.Is employee-position alignment and interests viewed as an enabler for motivation and employee engagement? N=4 4 Different Supervisors out of Eight Total. Not all Supervisors responded to each question due to Interview time constraints.	<ol style="list-style-type: none"> 1. S1 " But not in vocational personality terms. We will consider using RIASEC/SDS 'fit' with apprenticeship training applicants to be more confident about potential engagement of trainees which can result in increased success outcomes." 2. S3 "I think this could be something that you could do for us." (Using the researcher and the RIASEC Model) to support identification of interests and skills as part of the recruiting process." 3. S3 "Interests are not considered in the recruiting process. Funnily enough....We interview our tamariki and that's one of the big questions we ask kids, has interests in it so we can align what we're doing here at school and make them feel" But we're not doing it for each other! Oh, my goodness. That's a bit of a light bulb. No. Yeah, that it can be a contributing factor to employment, you know, to getting the job, I think." 4. S5 "What we do ask when we're interviewing people is what their values are, because we like to make sure there's a good match with our company values. But we haven't, we never considered asking them about their interests." 5. S7 "Well, I guess for me, yeah, it comes down to well partly is through the recruitment process. Identify what they enjoy about the job, what their interests are in the different aspects."

Table 12 Qualitative Concept Summary - Organisation's Understanding of Interest Profile of Role and Effort to Match Applicant to Role - Supervisor Viewpoint

Findings for this section indicate approximately half of employees believe their company or organisation does not understand their interests, and those that believe there is an understanding base it on skills acknowledged or tasks they are assigned by supervisors rather than a detailed, formal definition. Supervisor responses to questions related to employee interests and motivation support employee conclusions. Organisations appear to focus on identification and alignment of employee and organisational values. Understanding and aligning employee interests, even in the recruitment stage, was not currently in practise, but several organisations recognized the potential value of including the

RIASEC/SDS as part of their processes to improve trainee or employee fit. These findings indicate support for Assumption 2.

Assumption 3 - Management can create conditions for better fit when they understand employee interests and the interest content of jobs.

Associated Concepts	first-order	Representative Quotations from Participants in Supervisory Roles (8)
Supervisor Questions	Interview	1. S3 “Historically no.” S3 has historically re-engineered their own role to fill gaps in the appeal of the role.
8. Is employee-position alignment and interests viewed as an enabler for motivation and employee engagement?		2. S1 “Not formally. But will be considered.” Supervisor noted that two employees asked to re-engineer their roles to take on tasks more aligned with their interests; one just prior to Interviews and one two weeks after the Interview process. The RIASEC process confirmed the re-engineering for the first person and inspired the second person to make a request which was granted.
9. Is re-design of roles, or re-location of employees to roles they fit an option/strategy?		3. S5 “Yeah. I think so, if it aligns with their interests. I think we’re definitely open to it.” (reference to re-engineering of role)
N = 5		4. S7 “I guess we’re not really big enough to tailor all aspects of a role to exactly fit with someone, but yeah, certainly it worked. If they’re not so good at one part to make sure they’ve got support from someone else in the team. I guess it’s just supporting to sort of work with their strengths and tailor the way projects are done.”
		5. S8 indicated the intention to re-engineer three different roles in order to retain employees and increase their satisfaction and value to the business.

Table 13 Qualitative Concept Summary - Organisation's Understanding of Employee and Effort to Adapt Role to Employee - Supervisor's Viewpoint

Qualitative concepts regarding Management can create conditions for better fit when they understand employee interests and the interest content of jobs.

Supervisors recognised the potential for improving conditions for job-fit after their participation in the StandardSDS Summary and Occupation Code agreement calculation and discussion. Participation provided supervisors with increased understanding of employee interests and job content. Some supervisors attested to the absence of formal process to evaluate fit conditions, but expressed their intentions to implement the StandardSDS assessment as part of their recruitment and progression planning processes. As an outcome of the study processes, several supervisors took action to re-engineer tasks and scope of workplace roles to better match the interests of five incumbents at three organisations to support staff retention, progression planning and performance improvement. These findings and actions support Assumption 3.

Assumption 4 - Employees experience better job fit when they have made informed choices.

Quantitative Analysis for Employees experience better job fit when they have made informed choices.

Assessment of fit between the participant and their workplace role and organisation is based on the congruency, or agreement, between the three-letter StandardSDS Summary Code and the three-letter Occupation Code for their workplace role. The Iachan Agreement Index (scale zero to 28), was used to calculate the value of fit between each participant’s set of codes, and an associated percentile value and ranking (Holland, 2017). A summary of calculations is shown in Table 12. A high percentile rank for the Iachan index indicates a high level of fit for the participant with their workplace role.

Organisation	N	Iachan Agreement Index Job Fit MEAN	STD.DEV	VARIANCE	Percentile M F	Percentile Ranking
Total Population	26	23.53	6.209	38.556	71 75	Average
PTE/School	15	24.667	5.134	26.356	88 89	High
Manufacturing	11	22.000	7.148	51.091	65 70	Average

Table 14 Iachan Agreement Index for Job Fit - StandardSDS Summary and Occupation Codes

The Iachan Index for 58% of the population, PTE/School organisations indicates a High level of employee job-fit. The remainder of the population achieved an Average employee job-fit ranking. Participant responses to Interview 2, Questions 11 & 13 provided additional data for Quality of Job Choice and Job Fit. Responses are summarised in Table 13.

INTERVIEW 2 – LIKERT SCALE RESPONSES TO QUESTIONS 11 & 13					Mean	Std Dev
11. Quality of your current job choice					4.23	.71
Very Poor	Poor	Fair	Good	Exce		
1	2	3	4	5		
13.Experience of Your Interests and Fit with current job					4.00	.80
Very Poor fit	Poor fit	Fair fit	Good fit	Excellent fit		
1	2	3	4	5		

Table 15 Likert Scale Responses - Interview Two Question 13

Overall Likert scale score of 4.23 for Quality of current job choice and 4.00 for interest and fit with current job, suggest employees have made Good informed choices for their jobs. Cronbach’s Alpha was calculated for Likert scale scores 11,12,13 and the .712 value demonstrates an acceptable level of internal reliability for the questions which is further discussed in Chapter 4 Discussion.

Interview Two Questions 11-13 Likert-Scale Internal Reliability – Cronbach’s Alpha

Reliability Statistics			Item Statistics			
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items	Mean	Std. Deviation	N	
.712	.696	3	Q13_Interests_Job_Fit	4.0000	.80000	26
			Q11 Quality_of_Current_Job_C hoice	4.2308	.71036	26
			Q12_Extent_to_which_you _understood_the_nature_o f_your_current_job_at_the_ time_of_application	3.9231	.56022	26

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q13_Interests_Job_Fit	8.1538	.935	.775	.616	.250
Q11 Quality_of_Current_Job_C hoice	7.9231	1.354	.555	.530	.591
Q12_Extent_to_which_you _understood_the_nature_o f_your_current_job_at_the_ time_of_application	8.2308	1.945	.331	.255	.823

Table 16 Cronbach's Alpha - Internal Reliability for Likert-Scale Questions 11-13

This section, supported by qualitative data in the next section provides support for the value of the StandardSDS assessment Summary and Occupation Codes to facilitate informed job choice and measurement of job-fit, which supports Assumption 4.

Qualitative concepts regarding Employees experience better job fit when they have made informed choices.

Qualitative concepts regarding Employee fit with workplace Role are compiled in the following table. These concepts were derived from responses and discussion during Interviews Two, Questions 3 and 4 where participants responded to the StandardSDS Summary Code generated from their SDS on-line assessment, and Iachan Agreement Index calculation for their job-fit.

Associated first-order Concepts	Representative Quotations from Participants	Researcher Clarifications
Interview 2 Questions: 3. Did your results (Standard SDS Summary Code) resonate with you and seem accurate? N = 26 Response Tally Q5 21 Yes 5 Partial	2. “Yes. Makes Sense”	
	12. “Yes and No. O*NET Occupation Code suggests I’m in the wrong role, but SDS (Occupation Finder) database suggests a good match.”	
	13. “Yes. Pretty much bang on! Wow! So I knew what I wanted to do before I realised that I knew that was me! That's cool. That's very cool. 100% believable.”	This participant re-engineered their role two months prior to the Interview which increased the Iachan Agreement Index with their StandardSDS Summary Code from 55 to 99; Average to High level fit.
	14. “Four-way tie. Wow! All-rounder!”	Iachan Index indicated a 99 percentile match for current role as well as a Daydream occupation as a pharmacist; a University course of study the participant turned down.
	15. “I was surprised when I saw that graph, that it wasn’t really one of the dominant ones. That’s interesting to look at the numbers, how I ended up as a teacher. It’s quite interesting how it sort of worked out. Yeah. And how the numbers match up.”	This participant decided to reconsider a potential decision to leave their current role for another, which scored lower on the Iachan Agreement Index. A career path toward a high level Iachan match in career progression was indicated as well.
	16. “to think that all the effort that I’ve gone through to get where I am today that it kind of is a match for what I’m doing. You know it’d be pretty, pretty hard if you looked at this and it wasn’t a match. Well then, I did make the right decision going into HR instead of law.”	After reviewing the Iachan Agreement Index match at the 99th percentile, participant remarked made the attached remarks.
	17. “I’m not sure. Too much what to make of it, but my overall profile, that’s about right.”	O*NET Occupation code was a 99% match and SDS Occupation Finder code was a 59% match which raises a question about context for position classification calculation.
	18. “Yeah. Absolutely. That the profile makes perfect sense.	

	19. “Yes definitely.”	Participant predicted a 45 percentile agreement for Iachan Index and was correct. Process confirmed participant is in the wrong role and is keen to re-engineer their position or move to another employer or self-employment.
	20. “A score out of ten. I’d give it an eight or a nine.”	
	21.	<i>Participant</i> said the results of the RIASEC study confirmed what they had been thinking <i>they and partner</i> , could be doing as an alternative to <i>workplace role</i> . First. Taking a year off to travel and explore the wilderness of NZ and then working together running a more "Realistic" business; landscaping, house flipping, more physically active work. They will probably resign their <i>current role</i> in the next year.
4. Did any results (StandardSDS Summary Code) seem inaccurate? (Which ones and why?) N = 22 Response Tally 18 No inaccuracy 4 Some inaccuracy	2. “No. Not after the explanation.”	
	9. “Artistic was missing. Reaffirms requirement (for me) to get support for artistic activities since I scored low and I’m not good at creative things.”	(self-defined Investigative,Social,Artistic)
	10. “Good to know where I should be. Excellent. 99% aligned now that I’m in a different role. Cool. It’s good.”	
	11. “I guess the focus on Conventional “	(wasn’t expected based on their self-definition for the role)
	12.	O*NET and StandardSDS Occupation Finder code discrepancy. One calculation for Iachan Agreement indicated participant is in wrong role.
	13. “No position code for Continuous Improvement Manager.”	
	14. “No. Not really. Very accurate. Yeah. Very good.”	
	15. “Not accurate? No.”	

Table 17 Qualitative Concepts regarding Employee Fit with Workplace Role - Interview Two, Questions 3 & 4 SDS Summary Code Accuracy

Twenty-one of the participants agreed the StandardSDS assessment and Iachan Index calculation provided valuable information about their interests and process for comparison with their workplace role which could be used to make an informed choice of job and measurement of the choice. Several of the participants, and their supervisors, recognized the need to re-engineer the content for their present roles to create a better match, and several others confirmed alternate career paths. As stated in the quantitative section, these qualitative concepts demonstrate the efficacy of the StandardSDS assessment to facilitate better job choice and measurement of job-fit which support Assumption 4.

Assumption 5 - Managers see an important connection between fit and productivity

Qualitative concepts regarding Managers see an important connection between fit and productivity

Eight participants employed in supervisory positions at the organisations were asked to respond to questions about the validity of the cause-effect relationships portrayed in the Interest-Productivity Model, and the usefulness of the Holland RIASEC Model for defining and categorising employee interests. Three of the eight Supervisors were unable to take part in the discussion due to time constraints. The remaining five Supervisors agreed with the concepts and the usefulness of the Holland RIASEC Model for contribution to improved employee job-fit and productivity which supports Assumption 5.

Associated first-order Concepts	Responses from Participants in Supervisor Roles	Researcher Clarifications
<p>Supervisor reaction to the Interest-Productivity Model's validity and Usefulness of the Holland RIASEC Model</p> <p>N = 5</p> <p>Three supervisors were unavailable for this discussion and responses to all supervisor interview questions were not taken due to time constraints and responses made during Interview 2 which covered some supervisor questions.</p>	<p>1.</p>	<p>S2 was in general agreement with the input/output diagram and wholeheartedly agreed about the potential for improved productivity and engagement with improved alignment and the potential use of the Holland RIASEC model for defining interests of employees.</p>
	<p>2. S3 “ Useful for recruitment and verification of applicant. I think I think it has, you know, like for recruitment, but, but more so. Into ensuring that, you know, I’m just thinking about Candidate, for example . And now we use it and why he is that way? It’s not about what I’ve learned with Candidate over the last year or so is it’s not trying to make him into something that he’s not. Aspects of his life, but if you if you work with what he is great at, my god, the results are stunning. You know? That’s, that’s, that’s what I find. I can see its application in as, as you work.”</p>	
	<p>3. S5 (HR MGR) “Yeah. Yeah, I think. You could certainly use it, as you said, you know, the profile of the role. And then you candidates to fill it out. Make sure there’s a good match. Of interests with the role, yeah, I think that could certainly be something that you could do. Yeah.”</p>	
	<p>4. S7 “ I think there would be, like some value, particularly if people weren’t sure exactly where or a type of role that might fit. Or if you had like a wide selection of roles that you were sort of looking at and wanted to slot people into the best options. I found it really interesting, it’s sort of hasn’t really changed anything. I guess it’s confirmed a bit more clarity that, yeah, I have a pretty good fit for the type of role I’m doing. “</p>	

	<p>5. S8 “Yeah, that’s. That’s how I describe it.”(Researcher) And if people are working in jobs that they’re interested in, they’re going to be more interested in learning the skills. (S8) “Yeah. And they want to grow. Because when you’re not fitting in, why would I want why would Why would I want to learn that. I’m not interested. That’s me. productivity. Yeah. I talk a lot about in productivity. It’s like, I call that contribution. It compliments capacity and effectively engagement it builds capacity and engagement and that equals contribution to the organization. And if you are competent beyond your capacity then your engagement is affected. And if you are not competent....then you’ve got heaps of capacity, but engagement doesn’t matter. That’s the worst. Yeah. Interesting stuff.”</p>	<p>S8 remarks demonstrated appreciation for the Interest-Productivity Model and elaborated on the meaning for them. Understanding.... (S8 glancing through model flow)</p>
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Table 18 Qualitative Concepts regarding Managers see an important connection between fit and productivity - Supervisor Comments

Chapter 5. Discussion

Employee engagement, productivity, retention and job fit are important contributing factors to organisational productivity and success. The importance of pairing interests of employees with their workplace roles, to achieve job fit and alignment with organisational environment are tenets of Holland's RIASEC Model (1997). The study investigated the potential contribution of the Holland RIASEC Model (1997) to the understanding of employee interests and alignment with workplace roles and the potential for contribution to improved productivity. The following presentation of study results is aligned with the research question and elements of the Interest-Productivity Model. Relevant literature is cited to support the discussion.

Research Question

Is the Holland RIASEC Model as a useful tool for categorising and understanding Employee Interests in the New Zealand workplace?

In order to be useful, the Holland RIASEC Model would need to provide valuable information for employees, not otherwise available, while at the same time providing a schema for improved employment choice decision-making and workplace role enrichment. The research investigated the following assumptions and the potential for improved knowledge, fit and productivity using Holland's RIASEC Model;

1. Employees have insufficient knowledge of interests to make informed choices
2. Organisation have insufficient knowledge of employee interests and the interest profiles for role(s) to match employee and role.
3. Managers can create conditions for better fit when they understand employee interests and the interest content of jobs.
4. Employees experience better job fit when they have made informed choices.
5. Managers see an important connection between fit and productivity.

Assumption 1 - Employees have insufficient knowledge of interests to make informed choices

The discussion with participants about their interests was problematic. Defining one's interests is a concept few of the participants appear to have taken time to reflect upon or quantify. In the first interview, prior to working through the RIASEC process, seven participants replied, "Don't know" when asked to describe their interests and five others said their interests were a result of parental influence. Five others said their "interest had evolved" or were "intuitive" during their lives. The remaining seven described their interests as "doing things I like." It seems safe to say that a quarter of

participants could not describe their interests while the remainder provided a simple, somewhat generic explanation. When asked if they had considered their interests when they applied for their current or past jobs 60% said, “Yes” and the remaining 40% said, “Don’t know” or “No.” Explanation by three of the participants captures some of the reasons for the negative responses which demonstrate a lack of interest definition and external pressure.

“No. It was all I wanted to do. Is teaching an interest?”

“Didn’t want the job. Tapped on the shoulder.”

“I think I know what I don’t like to do.”

The inability of participants to easily describe their interests may be explained by the developers of Cognitive Information Processing CIP Theory. Sampson (2020) explain that knowledge of self, consisting of perceptions of past events rather than verifiable facts is stored in episodic memory and semantic memory, which consists of verifiable facts, which are less susceptible to perceptions, are stored in semantic memory (Peterson et al., 1991; Sampson et al., 2004).

Following review of the StandardSDS assessment results with the researcher twenty-one of the 26 participants confirmed a mean increase of 29.57%, from ‘Somewhat Clear’ to ‘Very Clear’, for their understanding of their interests, based on Likert Scale responses to questions 9 and 10 at Interview Two. As described in the Results section, to test whether this was a statistically significant change, an Exact Wilcoxon Rank Test was performed for the two sets of Likert Scale data for questions 9 and 10. The test showed a significant difference ($Z=-4.148$, $p<0.001$) which provides further support for the indicated increased understanding of interests.

Likert Scale responses, in this instance, are subjective to a degree, and it is worth exploring repetitive comments from participants. As mentioned above, twenty-one of the participants fully agreed and five partially agreed that their StandardSDS assessment results resonated and seemed accurate.

“Sums me up”

“Pretty much bang on! Wow. So I knew what I wanted to do before I realized that I knew that was me!”

“Yeah. Absolutely. That’s the profile makes perfect sense.”

“I’m not sure. Too much what to make of it...but my overall profile, that’s about right.”

Calculation of the Iachan Agreement Index comparison of each participant’s Self-Defined RIASEC three-letter code with their StandardSDS Summary code demonstrated an Average level of congruence in the 67th percentile. The results range from one score in the 4th percentile to ten scores above the 97th percentile, indicating that a significant number of the participants appear to have quickly grasped the RIASEC concept based on discussion of the Holland Model with the researcher during Interview One,

and applied it to their self-concept and interests during the interview. Twenty-one of 26 participants fully agreed and five partially agreed with their StandardSDS Summary Code designation providing context for comparison with their Self-Defined RIASEC code. The ease with which participants adopted the RIASEC concepts and the StandardSDS assessment output demonstrates Holland's intention to create an uncomplicated self-assessment (Holland, 1997).

One of the participants had an epiphany during the Self-Defined RIASEC code exercise as they identified a core interest difference between Conventional and Enterprising and Social types as defined by Holland (1997).

“Yeah. Yeah. I saw the numerical [referring to ideas Conventional types like to work with], and I was like, I wish I knew this at college. It would have saved me so much on my student loans. Twenty K on my student loan, if I'd known this information earlier.”

Another participant reflected on the value the RIASEC Model could have provided in their tertiary study and career choice during the Self-Defined RIASEC code exercise which was highly congruent (99 percentile) with their StandardSDS code.

“Probably could have helped me to say yes. To my acceptance into that program. Yeah. I'm really looking forward to showing my husband. He's gonna find it hilarious. He's gonna be like you could have been making so much money.”

These observations provide support for use of the Holland RIASEC model for post-secondary study choice confirmation as well as occupational choice.

An Aspirations Summary Code, generated by the StandardSDS assessment, was compared to each participant's StandardSDS code for congruency using the Iachan Agreement Index. The resulting mean score of 21.269 is described as an Average ranking by Holland (2017), and the amount of congruency between these sets of three-letter codes indicates the level of stable systematic thinking about interests and career possibilities. The result may suggest that participant's interests may be more highly aligned with alternate occupations or interests, or perhaps, that they have “fallen into” their current role without considering their interests. Four of the participants in top level management roles had a mean Iachan Index of 19.750 indicating a lower level of congruency for their StandardSDS Summary and Aspiration codes. Three of these four top level managers had Enterprising in the first position of their Summary Codes. Their reduced congruency level tends to align with Holland's (1997) observation that Enterprising types, compared to other RIASEC types, typically exhibit the highest degree of incongruency between their aspirations and interests, a situation he describes as dysfunctional.

It is important to note several issues encountered by participants and the researcher in regards to undertaking and interpreting the on-line StandardSDS assessment. The first issue presents as a source of frustration for study participants when they encountered American descriptions for workplace roles

in two sections of the assessment; previous jobs and DayDream Occupations, used to create the Aspirations Summary Code. The StandardSDS administered by PAR, Inc. in the USA uses occupation descriptions which are slightly inconsistent with New Zealand workplace position descriptions; for example a school principal in New Zealand is listed as an Administrator in the USA. Consequently, participants found difficulty listing occupations from their past and future if a difference between New Zealand and American occupation description existed. The StandardSDS algorithms attempted to automatically populate both sections of the assessment with the wrong title if there was a significant difference between American and New Zealand descriptions. The researcher was required to caution participants prior to under-taking the on-line assessment; either to skip or to 'do the best they could' to populate the assessment. This resulted in an undetermined impact to the Daydream Occupation and Aspiration Summary Code output. From the researcher's perspective, this issue will limit the usefulness of the RIASEC model in the New Zealand context.

A second, slightly more serious source of frustration and potential disengagement was encountered when participants investigated the Exploring Occupations section of their StandardSDS report which was provided automatically to participants and the researcher after completion of the on-line assessment. Participants are presented with occupations congruent with their StandardSDS Summary Code as well as permutations of the Code; for example a Social-Enterprising-Conventional SEC code has numerous permutations SCE, ECS, ESC, CES, CSE. Each of the permutations is presented with congruent occupation suggestions in the Exploring Occupation section. This was off-putting for participants who had high levels of differentiation, where one letter of their Summary Code was 8 or more points higher than the rest. High differentiation indicates they are likely to be attracted to occupations congruent with the same RIASEC Code as the first letter in the occupation code, but not to other permutations. The suggestion that participants explore other incongruent occupations created doubts about the validity of the StandardSDS assessment until the researcher identified the issue. After several Interview Two reviews, the researcher recognised the need to caution the remaining participants about the potential for interpretative mistakes and to wait for the researcher to explain. Curiosity intervened and the researcher was often required to provide a detailed interpretation to correct misinterpretation by the participants. A fair degree of interpretation for participants was required which suggests the use of the StandardSDS assessment without qualified support may result in less than satisfactory outcomes and a negative opinion of the usefulness of Holland's RIASEC Model. Aside from the two issues identified, the results of the study supported Assumption 1 that employees have insufficient understanding of interests to make informed decisions and Holland's (1997) StandardSDS assessment Summary and Occupation Codes can facilitate improved understanding.

Assumption 2 - Organisations have insufficient knowledge of employee interests and interest profile for role(s) to match employees and roles.

The most meaningful information for this aspect of the Interest-Productivity model comes from participant responses to questions during Interviews One and Two and Supervisor feedback. Interests appear to be informally discussed and considered during employee selection processes at study organisations. None of the participants, with the exception of one recent psychology graduate, were aware of Holland's RIASEC Model. Two participants, occupying HRM positions, had not been exposed to Holland or the RIASEC Model during their university study or while in practise.

Twenty-one participants responded to Interview 2, Question 5 "How well do you think the company understands your interest?" Eight(38%) of the respondents indicated they 'Don't know' or 'Doesn't' and thirteen (62%) indicated the company 'Does.' The positive respondents appear to be generous with their responses, commenting:

"I think they understand it pretty well."

"I think there's a pretty good understanding."

"Principal understands my skills."

Responses to questions 6 and 7, Interview 2 support an impression that a detailed understanding and matching of interests to roles may be informal at best.

"Put me in the right role. I'm not interested in being a [present position]."

"Provide tasks suited to my interests"

"I don't know. They use me pretty well."

"People read your CV, answer a bunch of questions. You start in a new business and there's no deep conversations or wide conversations around more on a personal level. What can you bring to the business? They just appoint you and you carry on."

"I think I have quite high (Position) technical knowledge, which doesn't get used at all."

"I think they probably are at the moment. Yeah."

Assumption 3 - Management can create conditions for better fit when they understand employee interests and the interest content of jobs.

Supervisor responses to Interview Questions 8 & 9 support the assumption that there is often an ad hoc approach to interest understanding and adaptation of workplace tasks to align with interests. One

organisation's GM received a request for additional tasks suited to an employee's interests two weeks after the study. Five of the eight participants in supervisory roles responded to the questions in a way that indicated a willingness to make adjustments that would create better fit:

S3 "Historically no [interest role alignment]."

S1 "Not formally. But will be considered."

S5 "Yeah. I think so, if it aligns with their interests. I think we're definitely open to it." (reference to re-engineering of roles at manufacturing organisation)

S7 "I guess we're not really big enough to tailor all aspects of a role to exactly fit with someone, but yeah, certainly if it worked. If they're not so good at one part to make sure they've got support from someone else in the team. I guess it's just supporting to sort of work with their strengths and tailor the way projects are done."

While reflecting on the deeper understanding of interests gained through the StandardSDS assessment, one supervisor expressed their intention to re-engineer three different roles in order to retain employees and increase their satisfaction and value to the business.

In conclusion, there was general agreement among all eight supervisors about the value of aligning employee interests with their workplace roles and tasks and two organisations were practising adaptation of employee roles to interests with a third actively planning to do so. These considerations and practices had recently evolved within the organisations concerned and were not intentional HRM processes.

Assumption 4 - Employees experience better job fit when they have made informed choices.

Iachan Agreement Index and Job-fit

According to Holland (1997) person-job fit and person-organisation fit, are achievable outcomes when personality types are paired with their respective environment. This discussion focuses on the person-job-fit, or employee-fit with workplace role. The comparison of each participant's StandardSDS Summary and Occupation Code, for their workplace role, was calculated using the Iachan Agreement Index to produce a measure of employee job-fit. The index score (0-28) was converted to corresponding percentile (0-99) and a corresponding rank of Low, Average, or High (Holland, 2017). Scores greater than the 85th percentile equate to a High rank, while Average rank corresponds to scores between the 16th and 85th percentile. Scores lower than the 16th percentile receive a Low ranking.

The mean score for the Iachan Agreement Index for the entire populations was 23.53 with a standard deviation of 6.209. This value equates to the 71st percentile for adult males and 75th percentile for adult females, and both scores fall within the Average ranking. Seventy-three percent of the population

achieved an Iachan Index score between 24 - 28 which equates to the 85+ percentile and a High ranking. One participant's Iachan Index ranked Low, below the 16th percentile, and the remaining twenty-three percent of the population scored in the Average range. It is worth noting that the lowest score is a result of the evolution of the position from its original role, where the participant would have scored 28/28, 99th percentile and a High level ranking. Over a period of several years, the required activities, skills and competency requirements for the incumbent's role transformed to a new occupation role and code which was incongruent with their unchanged StandardSDS Summary Code. The incumbent received no coaching, training or development to support them during the transformation.

Another participant, an HRM graduate previously unexposed to the Holland RIASEC Model, suspected they were not a fit for their role and predicted a forty-five percent match with their current position. Their reaction was positive when the results supported the prediction of a 45th percentile match. An Aspirational occupation code yielded a 99th percentile match for the participant which indicated a move to the aspirational occupation would be a positive outcome. The 45th percentile match generated a discussion between the participant and their manager about re-engineering of their position in the meantime.

The fifteen participants employed at educational organisations achieved a mean Iachan Index score of 24.667. an average 88.5 percentile and a High ranking for congruency. This outcome may suggest achievement of high levels of employee job-fit may be more easily achieved in an educational setting. A suggestion supporting this conclusion is the embedded level of familiarity with the educational workplace roles due to the long period of time individuals have spent in the environment. Twelve years of exposure to the daily activities, skill requirements, and culture of school workplace roles may enable a more accurate vocational choice for 'former students.' Most other occupations are not readily observed or understood from a school setting and require more research and investigation to achieve an employee-job fit. This may also be an indication of 'survival of the fittest,' where people who don't have sufficient interest don't get through teacher training or quickly leave teaching positions.

Occupation Code – O*NET and StandardSDS Database Issue

One issue related to implementation became evident during the research. Early during the interview portion of the study, the misalignment between some Occupation Codes in the StandardSDS and O*NET databases became apparent. This occurred at the second organisation where a more diverse range of roles exists than the first organisation. The StandardSDS assessment defaults to embedded Occupational Codes derived from the StandardSDS Occupations Finder (Holland, 2017). If a participant double-clicks on the occupation title in their StandardSDS report a hyperlink activates taking them to a position description located in the U.S. Department of Labor's Occupational Interest Network, O*NET website. A detailed description of the occupation is listed there and it includes an

Interest Code based on Holland's RIASEC Model. In some cases the interest code in the O*NET database is different than the interest code embedded in the StandardSDS Occupation Finder; for example, Chief Executive Officer is listed as SEI, Social-Enterprising-Investigative in the StandardSDS Occupations Finder. The same title, CEO, has an Interest designation as EC, Enterprising-Conventional in the O*NET database. The two different Occupation Codes, SEI and EC, are incongruent and conducting an Iachan Agreement Index against a participant's StandardSDS Summary Code can lead to highly divergent Iachan Agreement Indexes. The researcher discovered this issue during the Second Interview with the participant, and after investigation and discovery of the discrepancy between the O*NET and StandardSDS Occupation Finder, was able to provide an alternate interpretation for the participant. Nonetheless, the credibility of the StandardSDS assessment was diminished for the participant.

Further investigation may provide a partial explanation for the discrepancy between the O*NET and StandardSDS databases for Occupation Code descriptions. Reardon (2015) explains that theories cannot be copyrighted and Holland's RIASEC Theory has been interpreted and incorporated into many different career assessments and measurement tools and Eggerth, Bowles, Tunick, and Andrew (2005) found that the O*NET, SII, and Dictionary of Holland Occupational Codes disagreed on first letter code assignments about one third of the time. (Reardon, R. C. (2017)). The researcher understands that the O*NET and StandardSDS Occupations Finder database are maintained and updated by different organisations, U.S. Department of Labor and its preferred contractors and PAR, Inc. with its preferred contractors. The reason for the discrepancy in three-letter code designation for the same occupation could be the subject of further research. Perhaps development of a New Zealand database would resolve issues identified so far.

The difference between occupation codes suggests the possibility that classification of some occupation roles-particularly managerial roles- with a RIASEC code is dependent upon a variety of factors including the perspective and culture of the assessors, and the organisation's culture and maturity. A well-established company, Coca-Cola for example, with an established brand, product, processes and culture is primarily interested in maintaining the status quo and making small incremental changes to improve productivity and performance. A new start-up company, looking to establish market share with new products, customer-supplier relations with undefined processes and an expanding production capacity requirement will be looking at break-through behaviours, innovation and internal and external relationship building. The culture and maturity of these two companies would likely require different Chief Executives; perhaps an Enterprising-Conventional summary code would be ideal for Coca Cola, but a poor fit for the new, innovative, and morphing enterprise which might require a Social-Enterprising-Investigative CEO. It is conceivable the required Summary Code for the CEO could easily evolve from one combination of the four letters that define the role in the O*NET and

StandardSDS Occupation Finder to another combination as the organisational maturity and culture evolved.

Likert Scale Response Correlation Analysis & Internal Reliability

During Interview Two participants were asked to rank the “Experience of Your Interests and Fit with current job,” on a Likert Scale (Question 13). The mean score for responses was 4.00 with a standard deviation of 0.78. ‘Good’ is the corresponding answer for the 4.00 score. Participant selections were made after discussion of the Iachan Agreement Index comparison between their personal and occupation codes and detailed discussion of the StandardSDS assessment results with the researcher and their responses were based on their personal definitions and biases.

Spearman’s rho calculation failed to demonstrate a significant correlation between participant responses to Question 13, ‘Interests Fit with current job,’ and corresponding Iachan Agreement Index between Summary and Occupation codes. Five of the eight (63%) participants with 28/28 Index scores ranked themselves as an Excellent Fit and seven of thirteen (54%) participants with scores or 27-28 scored themselves as Excellent. The 27 and 28 Iachan Index scores represent the 97+ percentile for agreement between Summary and Occupation Codes.

The mean score of 4.23 for Question 11, ‘Quality of your current Job choice,’ is higher than participant’s ranking of their ‘Interest and current job fit’ in Question 13. Once again, there was no criteria to define the five different choices for quality of job choice. Questions 9 & 13 were marked at the same point during Interview Two. A Spearman’s rho calculation failed to demonstrate significant correlation between “Quality of your current job choice” and Iachan Index values for between Summary Code and Occupation Codes.

The lack of correlation between the Iachan Index for job-fit and scores for Quality of job choice and Interest Fit to current job appear to be reversed since a high level of interest to job fit would seem to be a pre-requisite for a conclusion regarding quality job choice. Perhaps the reversal of score values, 4.23 and 4.00, is a result of one or more factors; (a) lack of time or (b) criteria to make a considered response to the two questions or (c) poorly structured or insufficient questions for the topic. Which leads to a discussion of the construct validity of the Likert scaled answers in Interview Two.

The construct validity of the Likert scale questions for this study may not have sufficient internal reliability. A review and incorporation of additional, more specific questions regarding interests, job fit and quality of job choice may have provided a higher degree of internal reliability; the subjects of Questions 11, 12, 13 during Interview Two. Warmbrod (2014) explains two requirements for Likert-type scales; (1) more than one statement is required to quantify a construct and (2) scores derived from a Likert scale are summated from multiple responses to multiple questions, not a single statement or question. In summarising earlier work, Warmbrod (2014) contends that complex constructs cannot be

represented by a single item in a Likert-type scale. This view is supported by Hair et al.(1998) who emphasize that results based on response to a single item, can be potentially misleading. Internal reliability of the three Likert Scale questions 11,12, 13, focused on the construct of job-fit, was evaluated for Cronbach's Alpha, and yielded a score of 0.712, which is less than 0.8, the value of acceptable reliability according to Bell (2019). There is support for the existence of misleading results due to weak internal reliability of the Likert-Scale question construct and responses.

Qualitative Analysis:

Participant responses to Interview Two, Questions 3 & 4 provided support for the efficacy of Holland's RIASEC Model. Response to both questions indicated a high level of positive response from participants. Twenty-one of the participants (80%) fully agreed with the accuracy of the RIASEC descriptions for their interests and workplace role. The remaining five partially agreed. It is worth noting that some of the participants who partially agreed were Conventional and Investigative types and characteristically (according to their RIASEC vocational personality type) were reluctant to express a strong opinion about the accuracy of the codes and Iachan Agreement Index. The majority of the participants felt the StandardSDS codes, combined with the Iachan Agreement Index comparison, provided welcome clarification that they were in the 'right job.' Several participants remarked on the advantage of a theory-based, numeric value for their occupational choice which replaced their intuitive or opinion-based assessment.

Several of the participants, Human Resource Management graduates, expressed appreciation for Holland's RIASEC Model, and its confirmation of their employee-job fit as well as the potential for its application to the recruiting processes at their organisations. They both noted that neither had been exposed to Holland's vocational theory during their university course of study.

Assumption 5 - Managers see an important connection between fit and productivity

Reaction was favourable from all five of the eight workplace Supervisors who were able to provide feedback about the Interest-Productivity Model. One of the manufacturing organisation Supervisors enthusiastically reacted to the employee-interest-skill development aspect of the Model:

(S8) "Yeah. And they want to grow. Because when you're not fitting in, why would I want, why would I want to learn that. I'm not interested. That's me. productivity. Yeah. I talk a lot about in productivity. It's like, I call that contribution. It compliments capacity and effectively engagement it builds capacity and engagement and that equals contribution to the organization.

A supervisor at an educational organisation (S2), generally agreed with the Interest-Productivity Model concepts, and expressed wholehearted agreement about the potential for improved productivity and engagement with improved employee job-fit. Two of the supervisors expressed their intention to use

the SDS inventory as a tool for recruitment interview and workplace role definition and the value of the StandardSDS assessment and job-fit outcome for themselves.

S5 (HR MGR) “You could certainly use it, as you said, the profile of the role. And then you candidates to fill it out. Make sure there’s a good match. Of interests with the role. think that could certainly be something that you could do.”

S7 “ I think there would be, like some value, particularly if people weren’t sure exactly where or a type of role that might fit. Or if you had like a wide selection of roles that you were sort of looking at and wanted to slot people into the best options.

The positive reaction to the employee job-fit evaluation using the Iachan Index comparing StandardSDS Summary and Occupation Codes contrasts with recommended practise and curriculum advice in the New Zealand workplace and tertiary Human Resource Management courses. Two participants, both HRM graduates, were especially appreciative of the insights provided from the StandardSDS assessment for themselves, personally, about their job-fit and tertiary education choices as well as the application to their workplace roles.

In contrast, as discussed in Chapter 2, Stone (2017) does not recommend a calculation or procedure for measuring person-job or person-organisation fit. He argues that validity and reliability of selection criteria and predictors require measurement to ensure an accurate employment decision; one that is objective, non-discriminatory and therefore results in selection of the best candidate. Stone (2017) defines Predictors as factors used to predict successful job performance; educational qualification, skills, ability, previous experience, tests, and medical examination. Validity, reliability and correlation in regard to Criteria and Predictors of successful performance are defined but Stone (2017) provides no case studies or procedures for application of these statistical tests to real-world employment process. The emphasis according to Stone (2017) appears to be on performance-fit for the organisation rather than job-fit for the employee. The employee job-fit, as described by Holland (1997) engenders an employee job-fit which will generate performance and productivity, effectively getting ‘two birds with one stone?’

The subject of employee-fit may become an increased focus of HRM and organisations with the advent of ‘The Great Resignation’. Venuto (2021) in his article sub-titled, ‘Job-hopping fast becoming the new normal,’ writes, “there are now strong indications that Generation Z will have as many as 18 jobs over the course of their career, and the average tenure will reduce to around, two years.” Venuto (2021) cites research from AUT in October indicating forty-six percent of New Zealanders are having strong thoughts about job turnover, and the primary reason suggested in the article is workers are not happy with their jobs. Organisational values, or lack of walking the talk, and ethics are driving resignations by the younger generation in the workplace who are focused on core cultural codes that challenge historic practices in workplace including seniority, double-standards for pay, the Tall Poppy Syndrome

and a local worldview according to Venuto (2021). The necessity of replacing employees every two to three years will have a huge negative effect in terms of recruiting costs and loss of experience.

Ryland (2021) reports feedback from a Reserve Bank of New Zealand financial stability report which suggests, “Keeping people engaged, providing purpose and certainty, and creating a workplace where people feel that they belong are all critical to building a genuine and compelling employee value proposition.” Organisations may have to re-think recruitment strategies based on performance-fit to an employee job-fit more closely based on Holland’s Theory (1997) where congruence between an employee’s summary and occupation codes is more likely to guarantee interest, activity and cultural fit and providing a bigger opportunity to keep people satisfied, engaged and employed at the same company for a longer period of time.

The Interest-Productivity module suggests the Average mean score for employee job-fit for study participants may indicate a corresponding Average level of employee satisfaction and engagement. The Gallup (2017) World Report suggests a lack of employee engagement may be a contributing factor to low productivity within New Zealand where “just 14% are engaged in their job, showing up every day with enthusiasm and the motivation to be highly productive (Gallup, 2017, p. 8).” Ghandi (2021) explains the value of lost productivity as equivalent to 18% of an employee’s annual earnings if partially engaged or actively disengaged. Pitts (2020) of StatsNZ reports there are 2,690 big businesses in New Zealand employing more than 100 staff which equates to a minimum of 269,000 employees working in moderate-sized organisations. Combining an 18% productivity loss potential against 269,000 employees with a median weekly income of \$1000 for 2019 (StatsNZ, 2021), productivity loss due to Average engagement may be in the realm of \$48.5M per week. Employee engagement, while not entirely a function of employee job-fit, can be increased by improving alignment of interests and workplace roles, increasing the Iachan Agreement Index to High from Average, resulting in a significant potential impact to organisational productivity.

While there was general support for the assumptions underpinning the research, a number of issues were raised that affect the usefulness of Holland’s RIASEC Model in the New Zealand context. The next chapter will integrate these points in order to answer the research question presented in Chapter 1.

Chapter 6. Conclusions and recommendations

The goal of this study was to critically examine John Holland’s RIASEC Model as a tool for categorising and understanding employee interests as well as their job-fit, as a function of personal interest and workplace role alignment, in the New Zealand workplace. Five assumptions were investigated to determine the usefulness of Holland’s RIASEC Model and the validity of a cause-effect relationship between employee interests and productivity.

Holland's Theory of Vocational Personalities and Work Environments (1997) argues the assessment of individual interests using the Self-Directed Search (Holland, 1970) and Position Classification Index (Gottfredson, 1991) has the potential provide an accurate pairing of the individual with their environment. The environment Holland (1997) references consists of activities, opportunity to demonstrate competencies, shared outlooks, problem-solving tasks and cultural attributes which can be aligned with individuals. Alignment results in positive behaviours, contributes to employee satisfaction and promotes engagement and desire to improve competencies Holland (1997). These are the attributes that organisational theorists like Herzberg (1968) equate with a motivated employee and Stone (2007) would associate with desirable employee performance.

Initially, participants struggled to define their personal interests when asked open-ended questions about their interests and whether they considered their interests when applying for their current role. Personal interests seemed a foreign concept, which can be explained by Sampson's (2020) description of episodic memory in Cognitive Information Processing Theory. Holland's RIASEC Model (1997) describes interests within a context of six separate vocational personality types. This concept was easily grasped and applied with a fair degree of accuracy by participants after a short fifteen minute introduction to Holland's RIASEC Model during the first interview. Holland's Model enabled employees to categorise their interests using the RIASEC typologies, and each created a Self-Defined RIASEC code which was reasonably congruent with their Self-Directed Search Summary Code. Participants agreed that understanding of their interests increased by an average of thirty percent based on Likert-scale responses confirmed by qualitative data from the interviews. Several of the participants also agreed that prior knowledge of their RIASEC Summary Code and the understanding afforded to them would have resulted in better tertiary education and occupation choices. These outcomes confirmed Assumption 1 of the study.

Employee, supervisory and organisational knowledge of interests is not well-defined. Participant mean rating for knowledge of their own interests prior to RIASEC was 'Somewhat Clear,' given that they were unable to sufficiently describe their interests prior to introduction to RIASEC. Thirty-eight percent said the organisation 'Doesn't' understand their interests and the remaining affirmative responses suggest the organisation understands employee skills, one aspect of Holland's (1997) definition of interests. Supervisors admitted that knowledge of interest content for workplace roles and efforts to matching or adapting roles to employee interests was informal and ad hoc. Consequently the quality of employee job-fit and job choice is more or less 'left to chance'. Management's decision to re-engineer three roles at one manufacturing organisation to better match the incumbent's interests and two roles at a training organisation indicate a recognition that managers can create conditions for a better employee job-fit when they understand employee interests and the interest content of jobs. This realisation was also confirmed by several of the supervisors, including those working in HR

management, expressing an intention to use the Holland RIASEC Model for future recruiting procedures to enable a better employee job-fit. Assumptions 2 & 3 are confirmed as a result of the study findings.

Employees experience better job fit when they have made informed choices. The most convincing argument supporting Assumption 4 is illustrated by the reaction of several participants to their StandardSDS assessment reports. While the Iachan Agreement Index for one participant's Summary and Occupation Codes was High, the confirmation 99th percentile congruency with a tertiary course of study they chose not to accept generated a realisation that Holland's RIASEC Model would have supported a potentially more rewarding job-fit and tertiary education choice. Two participants were pleased that Holland's RIASEC Model supported their 'semi-informed' career and tertiary education choices, and one realised a contemplated change was possibly inadvisable. Participants valued confirmation of high ranked career choices and supervisors and HRM participants confirmed the potential contribution of Holland's RIASEC Model to their personal situations as well as the recruitment process. One supervisor was uncertain of the implications, perhaps as a result of not having enough data or time to review and contemplate the potential impact. Assumption 4 was generally supported.

The cause and effect relationship, portrayed in the Interest-Productivity Model, between employee interest understanding and alignment with workplace role, leading to increased employee satisfaction, engagement and competency and productivity was accepted by four of the five Supervisors interviewed. The fifth was agreeable with the concept, but reserved judgement pending further consideration.

Limitations

The study was limited by some methodological factors. The population for the study, N=26, is small and limits the generalisability of the results. The internal reliability of the Likert scale questions is in the lower range of acceptability which impacts the level of conclusions drawn from the data, which may also relate to an inability to conduct correlation analysis between the Likert data and Iachan Agreement Index values. A more robust design of Likert-type questions and descriptions for participants may have yielded data for more conclusive findings.

Conduct of the research interviews was affected by approach and timing. Some participants were uncomfortable making on-the-spot evaluation of StandardSDS assessment results, providing feedback to open-ended questions. Presentation of questions and results prior to discussion or an additional third, follow-up interview may have resulted in more considered and accurate responses. Three of the participants acting in supervisor roles were not able to respond to the Supervisor Interview questions of Interest-Productivity Model evaluation due to time constraints.

Interpretation and explanation of Holland's RIASEC Model and StandardSDS assessment report findings requires participation of a qualified career development counsellor, trained and familiar with vocational theory and Holland's RIASEC Model and its application. Participants were under the impression, based on the title and initial instructions from the researcher, that the StandardSDS assessment process was literally self-directed and possible for untrained, independent interpretation which led to mis-interpretation and confusion for some of the participants. The researcher was required to provide additional direction to participants to reduce the chance of misinterpretation. On the other hand, the uptake and use of Holland's RIASEC typology by participants was quick and fairly accurate when facilitated during the Self-Defined RIASEC exercise in Interview One.

Answering the Research Question

Despite the limitations there was support for all the assumptions associated with the research question. The study, therefore, supports the view that Holland's RIASEC model is useful in the New Zealand context. Even in the organizations where there was high person-job fit, participants saw value in application of the model.

That usefulness would be enhanced by resolving issues identified in the study. The American origins of the StandardSDS assessment affected responses to several sections, past occupation and My Occupation Daydream data entry. The Australian version of the Self-Directed Search, which was considered for this study, may provide a resolution. If this is not the case, an occupation title translation device for New Zealand and American job titles could be created or sourced from other applications. Occupation codes for participant workplace roles should be checked for contextual accuracy prior to calculation of Iachan Agreement Indices; maturity and culture of the organisation, or database source of the occupation code, can affect the efficacy of the system-generated three-letter code for the participant. Review of the occupation codes, conduct and interpretation of the StandardSDS assessment should be supported by a qualified career development counsellor trained in administration of tools associated with the Holland RIASEC Model; StandardSDS assessment, Position Classification Inventory, Career Thoughts Inventory, and Cognitive Information Processing.

Implications

Currently the Holland RIASEC model is primarily used in New Zealand as a career development tool. It is most likely to be used a personal counselling context prior to employment. Its use within organizations is likely to be limited because it is either well known or not highly valued by the HR professional community.

Utilisation of Holland's RIASEC Model has potential to provide significant improvements in a number of applications:

- (1) Utilisation of the StandardSDS assessment and Iachan Agreement Index can provide a numeric value for measurement of employee job-fit which can:
 - a. Serve as an additional gate for candidate recruitment to ensure alignment of interests between employee and occupation. This is an especially important consideration for Gen Y & Z candidates who are likely to resign if their values and work content are misaligned.
 - b. Indicate the gap between LOW or AVERAGE Iachan Index rank and a HIGH rank for existing employees and their workplace role. Gap analysis will provide a strategy and actions to better align employee interests with their workplace role, job re-engineering, which will contribute to increased engagement, productivity and reduced leave intention.
- (2) Utilisation of the StandardSDS assessment and Iachan Agreement Index can be used to double-check progression plans for employees, ensuring that promotions or lateral moves do not result in disappointment and dis-engagement caused by inadvertent misalignment of Summary and Occupation Codes for the new role.
- (3) Addition of the Holland RIASEC Model to the tertiary curriculum for Human Resource Management will prepare HRM practitioners to implement and administer vocational theory which may simplify as well as compliment current personnel theory and practise.
- (4) Universities may also wish to consider use of Holland's RIASEC Model and the StandardSDS assessment for its original intention as a career development schema to double-check student's tertiary education choice of study. This service to new entrants and on-going students can reduce drop-out rate, changes of major and increase over-all study completion rates and efficient use of educational funding, private or public.

Proposals for further research and investigation

This study provides a basis for further large sample research which may contribute to improved employee job-fit, recruitment practices and productivity in the New Zealand workplace. Further research could include:

1. A repeat of the present study with an increased number of Likert-scale questions to achieve a higher level of internal reliability for the construct, improved interview schedules and timing to permit more considered evaluation and increased population size in an expanded cross-section of New Zealand organisation types and sectors.
2. A large scale study to determine the accuracy of employee and student interest self-definition in New Zealand with a view to improving tertiary study selection and workplace role choices, including the financial impact of improved choice.

3. A large sample longitudinal study within one or more New Zealand business organizations to determine the congruency of employee interests and workplace role and the impact on employee wellbeing, satisfaction, engagement and productivity while specifically focusing on the interest aspects of satisfaction as defined by Herzberg (1968) and Spector (1997).
4. Further investigation for the gap between personnel and vocational psychology and recommendations to close the gap, if warranted, by incorporation of Holland's RIASEC Model into tertiary HRM curriculum and recruiting practise in New Zealand business.
5. Investigation into the validity and cause(s) for higher employee job-fit Iachan Indices for educational organisations compared to manufacturing, as reported in this study.
6. Investigation of the effect of business culture and maturity on determination of position classification codes. Is there a significant difference and to what extent does it affect Iachan Agreement Index calculation and generalizations of congruency across businesses with similar or disparate culture and/or maturity?
7. Randomised controlled experiments investigating the potential long-term impacts of application of Holland RIASEC Model for entry-level university students on study, work choices, job fit, and career progression when compared against a control group.

The study has confirmed that the Holland RIASEC Model demonstrates a degree of usefulness for improved understanding and categorisation of employee interests in the New Zealand workplace. The study has contributed to the body of knowledge associated with personnel and vocational psychology in the New Zealand context. The study has exposed a potentially unwarranted gap between personnel and vocational theory and application to tertiary Human Resource Management curriculum, HRM recruiting practise, employee job-fit definition, engagement and productivity models. Holland's RIASEC Model and associated tools; StandardSDS assessment and Position Classification Inventory PCI, should be considered for recruitment, placement and improved employee job-fit within the New Zealand workplace. Application of Holland's RIASEC Model to HRM practices may provide a positive contribution to employee job-fit, satisfaction, engagement and productivity based on outcomes of the study. Career development counselling skills and capability will be required to effectively apply Holland's RIASEC Model to HRM practices in the New Zealand workplace.

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Appendices

Appendix One - Interview Two Likert Scale Questions

How do you rate the following ?

a. Knowledge of your own interests prior to these Interviews:

Not at all clear	Not so clear	Somewhat clear	Very Clear	Extremely Clear
1	2	3	4	5

10. Knowledge of your own interests after using RIASEC

Not at all clear	Not so clear	Somewhat clear	Very Clear	Extremely Clear
1	2	3	4	5

11. Quality of your current job choice

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

12. Extent to which you understood the nature of your current job at the time of application

Completely misunderstood	Somewhat misunderstood	Somewhat understood	Mostly understood	Completely understood
1	2	3	4	5

13. Experience of Your Interests and Fit with current job

Very Poor fit	Poor fit	Fair fit	Good fit	Excellent fit
1	2	3	4	5

Appendix Two – Interviews One, Two & Supervisor

Usefulness of John Holland's RIASEC Interest Inventory for Categorising and Understanding Employee Interests in the New Zealand Workplace

EMPLOYEE INTERVIEW ONE:

DATE: _____

COMPANY _____

PARTICIPANT _____

Introductions & Explanation

- Rob's relevant background and story about how this study came to be.
 1. Poor career counselling myself. My interest was 'traveling,' exploring, seeing people and places.....wanted to travel for free.....airline pilot.....counselor/friend recommended mechanical engineering and US Navy flight programme. I disliked engineering study. Couldn't get into Navy flight programme. Went traveling on my own for years.....Sat in a 747 cockpit fifteen years ago and realised once again (after several introductory flight training attempts), I wasn't interested in sitting in a cockpit for twelve hours looking at dials!!! My interests didn't match my study or my career objectives.....I didn't know it. Discover of 'science' with two daughters. Graduate Certificate in Career Development. Recognition of mis-alignment at work. Help support improved recruitment and placement in the workplace by better alignment of interests and jobs.....but verify it's true first.
- Explanation of study process and confirmation of willingness to undertake survey with recorded conversation or approval for researcher to take notes.

Questions:

1. What is your current role in the company?
2. How long have you been in the role?
3. What is your best experience of work? What made that the best?

4. How did you get this job?

5. If you think back to the moment when you chose to get into this work, what were your reasons for applying and accepting this job, rather than looking for other jobs?

6. Has it been what you expected? (In which ways yes, in which ways no?)

7. Think about what you do in your free time and professional life. What kind of activities do you find most interesting and why?

8. Did you seriously consider your interests when you applied for your current role or other jobs?

9. How do you know what your interests are? (For example: do you go by your intuition, trial and error, do you reflect on what makes work meaningful for you, do you get advice from other people with more experience about what job you might be suited to, did you get professional advice, such as a life or career coach).

10. What difference exists between your interests in the workplace and outside of it?

11. How would you describe the 'fit' between your interests and your current job? In what ways do you fit? In which ways do you not fit?

12. What kind of role would suit you better than the one you have now? What would the ideal job look like to you?

13. What areas on the RIASEC model describe your interests ?

R I A S E C

14. Instructions for completing online Self-Directed-Search
 - a. Carefully read instructions for each section (e.g. "Like" versus proficient)
 - b. Please don't read results until we discuss at Interview 2

Usefulness of John Holland's RIASEC Interest Inventory for Categorising and Understanding Employee Interests in the New Zealand Workplace

EMPLOYEE INTERVIEW TWO:

DATE: _____

COMPANY _____

PARTICIPANT _____

Explanation

- Objective of follow up interview: i) to understand your experience with the tool and what impacts it might have on your job 'fit,' ii) for me to help you interpret and reflect on your results.
- Remind participants results will not be disclosed to anyone other than you and your supervisors, and all results anonymised with no reference to your name or organisation.

Questions:

12. How did you find the SDS inventory?

13. Did you find the questions ambiguous, or clear and easy to answer? Were your results easy to understand?

- Explanation of the RIASEC model and Employees Code and Associated Interests (based on Holland description of interests)
 1. Holland Hexagon
 2. RIASEC Interest List
 3. O*NET Code for your role and others which are searchable on O*NET

14. Did your results resonate with you and seem accurate?

15. Did any results seem inaccurate? (Which ones and why?)

16. How well do you think the company/school understands your interests? Why do you say so?

17. How could the company/school make better use of your interests?

18. What value to you or the company would be created with a better understanding of your interests?

19. What do you do to learn about or get better at your role? What specifically have you been learning about lately? (Checking out the connection between interests and competence).

How do you rate the following ?

20. Knowledge of your own interests prior to these Interviews:

Not at all clear	Not so clear	Somewhat clear	Very Clear	Extremely Clear

21. Knowledge of your own interests after using RIASEC

Not at all clear	Not so clear	Somewhat clear	Very Clear	Extremely Clear

22. Quality of your current job choice

Very Poor	Poor	Fair	Good	Excellent

23. Extent to which you understood the nature of your current job at the time of application

Completely misunderstood	Somewhat misunderstood	Somewhat understood	Mostly understood	Completely understood

24. Experience of Your Interests and Fit with current job

Very Poor fit	Poor fit	Fair fit	Good fit	Excellent fit

Additional Comments from Participant:

- Further explanation about the use of the Holland Code and exploration in O*NET and the career development resources, and my availability to support, if required. Response to Employee questions. Clarification of anonymity and thesis outcomes and availability.

Usefulness of John Holland's RIASEC Interest Inventory for Categorising and Understanding Employee Interests in the New Zealand Workplace

SUPERVISOR INTERVIEW:

DATE: _____

COMPANY _____

PARTICIPANT _____

Explanation;

- Rob's background and how study evolved
 1. Poor career counselling myself. Discover of 'science' with two daughters. Graduate Certificate in Career Development. Recognition of mis-alignment at work. Idealist-spread the word – but verify it's true first.
 2. Anonymity and Consent Form sign-off

Questions:

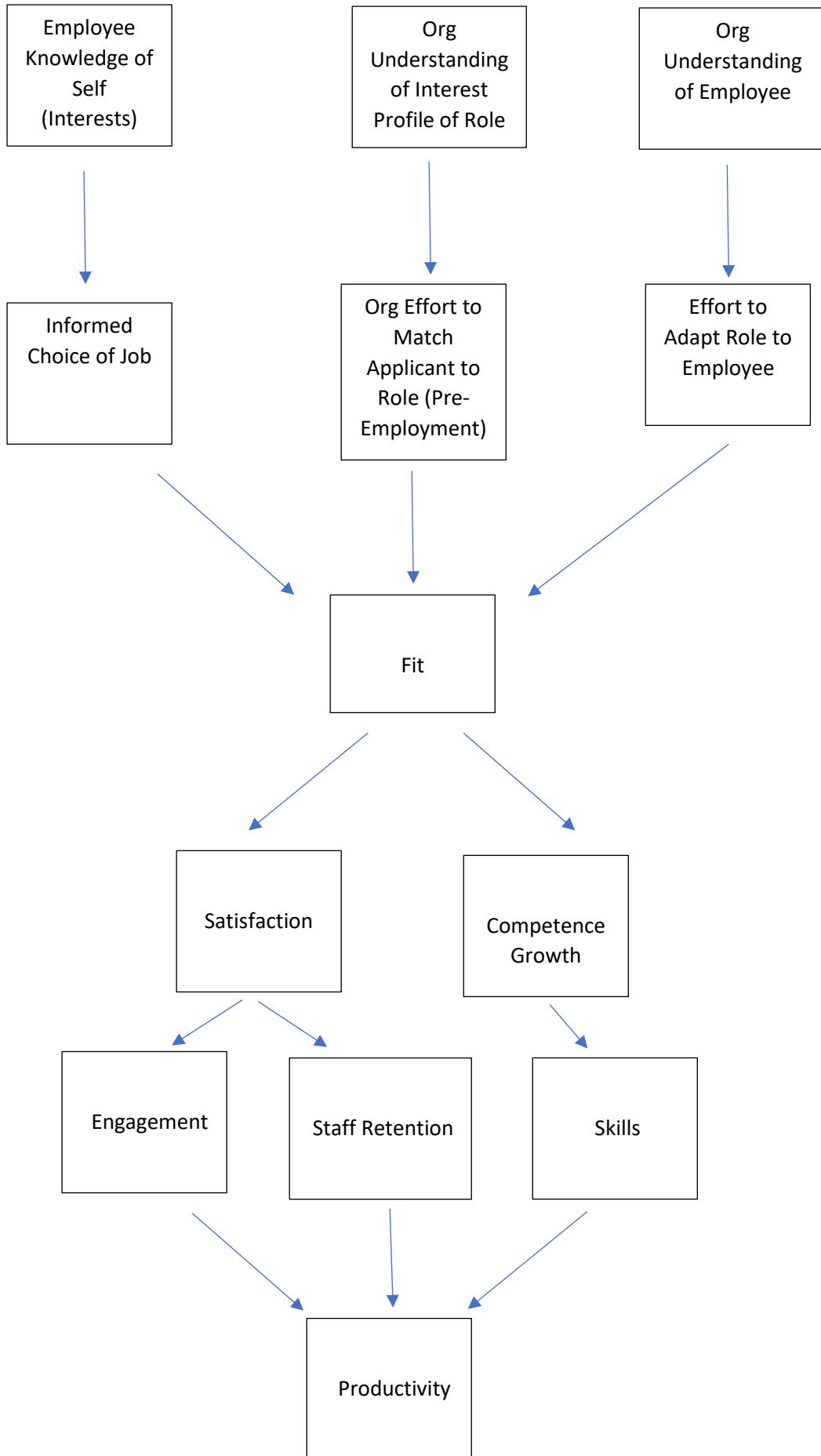
1. Could you talk about challenges around staff retention and productivity that you face?
2. If you think back to specific instances where you have lost staff or struggled to motivate staff to engage, what factors do you attribute these issues to? (Do you think it is about improving recruitment, better placement, better performance evaluation, more opportunities for professional development?)
3. Would you say there are or are no issues around fitting employees with certain interests and capabilities to specific job functions?
4. How do you define employee interests? *Do you see employee interests as the main and most important factor when matching staff to roles, or are there other factors that come into play?*
5. Where do employee interests fit from management's point of view?
6. How do you measure or consider employee – position alignment in practice? (skills, attitude, ?)
7. Are interests considered as part of the employee recruitment process?

8. Is employee-position alignment and interests viewed as an enabler for motivation and employee engagement?

9. Is re-design of roles, or re-location of employees to roles they fit an option/strategy?
 - Explanation of motivation theory/ interest facet and RIASEC model and workplace position DHOC codes
 - Hexagon , RIASEC Interest Definitions, DHOC Codes / O*NET

10. What accuracy or usefulness is provided by the DHOC codes for workplace positions at your company?

11. What usefulness could the Holland position and employee codes provide?



Employee Interests Defined

Interests are defined as, “the feeling of wanting to give your attention to something or of wanting to be involved with and to discover more about something” according to Cambridge Dictionary

Assumptions from the Model (about Usefulness)

1. People don't naturally have self-knowledge about interests
2. Choices about employment are not informed in terms of interests
3. Organisations don't naturally understand interests inherent in roles
4. Organisations don't make efforts to match applicant interests to roles
5. Organisations don't understand the interests of existing employees
6. Organisations don't make efforts to adapt roles to suit interests of employees
7. Because of Assumptions 1-6 the quality of 'fit' is left to chance
8. Quality of fit impacts level of satisfaction
9. Quality of fit impacts employee efforts to grow competence
10. Quality of fit impacts productivity