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Peter Rex Massingham Leona Tam

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Peter Rex Massingham and Leona Tam
School of Management, Operations and Marketing, University of Wollongong, Wollongong, Australia

Abstract

Purpose – The purpose of this paper is to examine the relationship between human capital (HC) and value creation and employee reward. HC is an important component of intellectual capital (IC). There is growing interest in how IC can be used to create organizational value. This paper addresses the need for critical analysis of IC practices in action. Based on data gathered from three annual surveys at Australia's second largest public sector organization, the paper introduces psychological contract (PC) as new HC factors, and develops a method to measure HC in terms of value creation (work activity) and employee reward (pay). The findings have practical implications for managers in using the paper's HC measurement to achieve strategic alignment (SA) of the workforce.

Design/methodology/approach – The research was based on data gathered from three annual surveys (2009-2011) of staff at Australia's second largest public sector organization. A total of 248 questionnaires were completed. Three independent variables conceptualized HC: first, employee capability (*HC*1); second, employee satisfaction (*HC*2); and third, employee commitment (*HC*3). Two dependent variables were tested: work activity and pay. The data collected in this study was analyzed through the use of bivariate correlation and linear regression using SPSS software.

Findings – The paper's major finding is that HC1 (employee capability) and HC2 (employee satisfaction), had a direct positive relationship with the importance of work activity. The paper's second finding was that only HC1 has a direct positive relationship with the pay. However, HC3 (employee commitment) had a direct negative relationship with the importance of work activity. Further, HC2 and HC3 had no relationship with pay. The research project organization (RPO) achieved SA with employees' capability and motivation; as well as employee capability and pay. However, inequities emerge in terms of employee commitment and value creation (work activity) and in the PC factors and pay.

Research limitations/implications – While the research findings are limited by them being based on a single RPO, this is offset to some degree by the longitudinal nature of the study and the size of the RPO. It also presents opportunities for further research, particularly in terms of further testing of the new conceptualization of HC in other organizations and industry settings, and investigation of the failed hypotheses: PC and pay; and employee commitment and work activity.

Practical implications – While strong PC employees are being asked to do important work, they are not always being paid at the rate of colleagues doing similar work. This will create perceptions of distributive justice, which will make those with strong PC unhappy, thereby decreasing their PC, disrupting the SA of the value creation, and lead to employee turnover. Managers can address this problem by using the HC method outlined in this paper to introduce methods such as merit increases and variable pay. While this is problematic for public sector organizations often constrained by having to fit salary awards, innovative organizations are increasingly considering more flexible pay systems.

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Originality/value – The paper introduces a new conceptualization of HC, and two proxies for organizational performance: pay and work activity. The paper addresses calls for IC in practice research to make the field more relevant for practitioners. The HC model introduced will allow managers to act on IC measurement by linking HC value with adequate pay, increasing motivation, commitment, and productivity, leading to increased innovation and reduced employee turnover.

Keywords Human capital, Public sector organizations, Intellectual capital, Work, Performance related pay

Paper type Research paper

Introduction

This paper examines the relationship between human capital (HC) and value creation and employee reward. HC is an important component of intellectual capital (IC). There is growing interest in how IC can be used to create organizational value. This paper addresses the need for critical analysis of IC practice in action. Based on data gathered from three annual surveys at Australia's second largest public sector organization, the paper introduces psychological contract (PC) as new HC factors, and develops a method to measure HC in terms of value creation (i.e. work activity) and employee reward (i.e. pay). The findings have practical implications for managers in using the paper's HC measurement to achieve strategic alignment (SA) of the workforce.

The paper explores how public sector organizations may use IC by focusing on strategy execution and employee compensation. The outcome is SA of the workforce which creates value from IC via innovation. To achieve its aim, the paper is divided into three sections. The first section examines some of the literature surrounding IC and its challenges in the public sector, as well as the conceptualizations underlying this paper. The second section addresses the methodology used in this research project by describing the research frameworks containing the questions to be examined, the manner in which the data were collected and analysed, and the findings. The third section of this paper provides a discussion of the results and the implications for IC research and those interested in using IC in practice.

The practical implications of the paper focus on what to do if organizations find their workforce is not strategically aligned. The findings at the research project organization (RPO) showed that while employees with strong PC with their organization, i.e. happy and loyal, are being asked to do important work, they are not always being paid at the rate of colleagues doing similar work. This will create perceptions of distributive justice, which will make those with strong PC unhappy, thereby decreasing their PC, disrupting the SA of the value creation, and lead to decreased innovation and employee turnover. Managers can address this problem by using the HC conceptualization outlined in this paper to introduce initiatives such as merit increases and variable pay. While this is problematic for public sector organizations which often are constrained by having to fix salary rewards, innovative organizations are increasingly considering more flexible pay systems.

The paper's originality lies in a re-conceptualization of HC. The paper addresses calls for IC research to make the field more relevant for executives and practitioners. The HC conceptualization introduced here will allow managers to act on IC measurement by linking HC value with adequate pay; increasing motivation, commitment, and productivity, achieving SA in the workforce, leading to increased innovation and reduced employee turnover.

The third-wave of IC research

The theory of IC emerged in the early 1990s in response to growing interest in intangible assets. There have been three stages of IC research. The first stage was the

development of a measurement framework (Guthrie and Petty, 2000). For example, Sveiby (1997) classified intellectual into three components: first, internal structure; second, external structure; and third, employee competence. The most widely used classification is Stewart's (1997) model of HC, structural capital (sometimes called organizational capital), and customer capital (sometimes called relational capital). The second stage of IC research used these frameworks to empirically measure the value of IC and how this can be achieved in practice. This research included content analysis of company annual reports and the use of various methodologies claiming to value IC; but this research has been criticized as "over used, and lacking in new contributions and validity" (Dumay, 2014, p. 3). There is recent interest in other capitals and how these can be used to create organizational value (Abeysekera, 2013). While various classifications of IC have served the field well, they are broad and abstract concepts. It is crucial to operationalize them so that they can be translated into management action.

The third stage of IC research is more practice-focused, "based on a critical and performative analysis of IC practices in action" (Guthrie *et al.*, 2012, p. 69). There is growing interest in how IC can be used to create organizational value (Abeysekera, 2013). IC is increasingly used as an analytic tool to assist strategic planning involving better management of intangible assets (Whyte and Zyngier, 2014). However, there is a need to translate this research into practical management guidelines so that managers can see how to use IC. Only then will IC practices in action be seen by management to create value. Associated with this theme is the timeliness of IC reporting. Dumay and Tull (2007) argue that more frequent disclosure of IC would provide higher immediacy value, which is particularly relevant if our aim is to improve perception of IC in practice.

This paper is targeted at the "third-wave" of IC research, amid calls from the editor of the *Journal of Intellectual Capital* (*JIC*), Mr Rory Chase, for IC to be more performative (cited in Dumay, 2014), which in this paper we interpret as being about actions or IC in practice, and for IC researchers to develop new models that help better understand how IC works and is managed within an organization (Dumay, 2014). Much of IC research has focused on measuring and reporting the quantitative value of IC (Dumay, 2014), which is an admirable goal due to the growing need to measure intangible assets like knowledge (Guthrie *et al.*, 2006).

The field appears to have become stuck in the pursuit of measurement constructs and quantitative values, and its main journal *JIC* seems to have been type-cast as an accounting journal (Dumay, 2014). Mr Chase has asked researchers to broaden their focus and look at a more managerial perspective, particularly in terms of how IC is or can be applied. IC researchers are increasingly using the terms – manage and measure – together in their discussion of IC and its future (e.g. see Cleary, 2009; Sillanpää *et al.*, 2010; Dumay and Rooney, 2011). In their discussion of the internationally recognized public sector IC leader – the Land and Property Authority of NSW (Lands), Dumay and Rooney (2011) explain that there is an increasing tension in public sector organizations to find a balance between measuring and managing IC. They raise a thought provoking question: is intellectual measurement necessary for the effective management of IC? They link their discussion to Drucker's (1954) pioneering concept of management by objectives. The focus on measuring IC seems to have been driven by a loose assumption that what gets measured gets managed. There is increasing doubt that the measurement of IC, in isolation, creates value. However, most organizations comes up short in actions after obtaining measured values of IC.

An important challenge for IC research is the inability of the field to identify a set of measures which are widely accepted and adopted. The field's focus on measurement appears to suggest that it must get "accurate" IC measures before progressing to managing IC. As no consensus on the measures has been reached, IC research risks becoming stagnant or being dismissed, IC is seen as an abstract idea that cannot be acted upon. This risk is generated because action, rather than measurement, is the way to create organizational value. Public sector organizations likes Lands (a State Government agency) have tackled this problem by focusing on narrative rather than measurement. Lands appear to have given up on measuring IC and are now focused on reporting how they are mobilizing resources – IC practices – rather than accounting for IC (see Dumay and Rooney, 2011).

Managing IC

The third-wave of IC research aims to persuade managers to use IC. Marr (2003) identified five main reasons why organizations measure and report their IC:

(1) To help organizations with strategy formulation.

(2) To help assess strategy execution.

(3) To assist in strategic development, diversification and expansion decisions.

(4) As a basis for employee compensation.

(5) To communicate with external stakeholders.

It is the fourth issue, the use of IC as a basis for employee compensation, that is the primary focus of this paper, with a secondary focus on the second issue, to use IC to help assess strategy execution. The reason for this focus is provided via the evolution of Kaplan and Norton's Balanced Scorecard (BSC) (e.g. see Kaplan and Norton, 1996). When the BSC first emerged, it was seen as a measurement model. The BSC argued "what you measure is what you get" (Kaplan and Norton, 1992). However, over time, the BSC has evolved and Kaplan and Norton saw that the real value in the BSC was in strategy execution. In this paper, we examine these two foci to examine how IC may be used to achieve SA. SA occurs when the organization aligns its people, systems, and culture to execute its strategy (Kaplan and Norton, 2006). SA is the proxy for performance that will enable increased innovation and productivity. We will examine how IC may be used to achieve SA within their workforce.

The public sector and IC

As this *JIC* Special Issue examines IC and the public sector, we will present our research findings within this context. Public sector organizations present interesting challenges for IC. While IC has been embraced by many federal government agencies, it has had less take-up at the state and local government levels (McNabb, 2007). Dumay and Rooney's (2011) study of Lands – a State Government agency – demonstrates how even a best practice public sector IC leader can struggle to find an appropriate balance between measurement and management of IC. In the case of Lands, they have focused on the mobilization of IC, rather than reporting measured values, and in doing so have concentrated on IC practice via narratives of achievement (Dumay and Rooney, 2011). It seems that Lands have achieved this transition from measurement to action by adapting the BSC to suit their needs. We follow the same approach in this paper.

Researchers have argued that IC can gain traction in the public sector if managers are persuaded to focus on innovation (McNabb, 2007). Innovation is the process of creating something different; it occurs with the conversion of existing knowledge and ideas into new benefit, such as new or improved products, services or business processes (McNabb, 2007). In the public sector, innovation typically involves new technologies, service delivery, or new processes or systems (Edvinsson *et al.*, 2004). The measurement and management of innovation may be achieved via the BSC's learning and growth (L&G) dimension. It is here where we believe the management of IC will create most value; as a tool to adapt the BSC's L&G dimension to mobilize innovation.

HC

IC is typically defined as the sum of an organization's resources encompassing knowledge, information, intellectual property, experience, and any intellectual resource that can contribute to value creation for the organization (Bontis, 2002). IC encompasses three primary interrelated components: HC, structural capital, and relational capital (Sveiby, 1997). HC represents the human factor in the organization: the combined intelligence, skills, and expertise that give the organization its distinctive character (Bontis 1998). Researchers argue that HC is the firm's most important asset because it is the source of creativity and, therefore, innovation, change, and improvement (Carson *et al.*, 2004). Given this paper's proposition that innovation represents an opportunity to create value from IC in practice, we focus on HC as the source of innovation.

The conceptualization of HC presented in this paper is new. We are not aware of other research which has defined HC in this way. The conceptualization is based on combining conventional views on HC with the individual's emotional relationship with their organization. PC is the emotional relationship between the individual and employer and measures organizational commitment (Massingham and Diment, 2009). PC may be understood within the motivational processes of social exchange theory and the norm of reciprocity (e.g. Blau, 1964; Homans, 1961). The origins of PC come from the work of Argyris (1960), who used the term to describe the relationship between a group of employees and their supervisor. Psychological research on mental models of employees, promise-making, mutuality, and affective attachment are considered the building blocks for PC theory (Rousseau, 2001). The construct was further developed to describe a set of unwritten expectations and subjective beliefs that exist between employees and their employers and govern the continuing development of the employment relationship, which evolves over time. This paper divides PC into two factors: employee satisfaction and employee commitment. While both factors capture the employees' emotional relationship with their organization, the former measures whether the individual is happy and the latter measures whether they are willing to stay.

The conceptualization presented in this paper is that HC comprises of three sub-constructs: employee capability, employee satisfaction, and employee commitment. The first is based on IC theory, while the other two are based on psychometric theory. Psychometric theory examines the psychology of human behaviour at work. The measurement used for employee satisfaction and employee commitment used well established instruments from psychometric theory including Eisenberger *et al.* (1990) and Robinson and Rousseau (1994). Employee satisfaction and commitment are used as proxies for PC. Employee satisfaction refers to whether the employee is happy at their workplace and employee commitment focuses on how willing they are to stay.

Employees who are happy and want to stay for the long term are defined as having strong PC, and more likely to have positive work attitudes and engage in behaviours creating value from their knowledge for their organization. The conceptualization is that employee capability is influenced by employee satisfaction and commitment. Employee capability may or may not generate value. It is only when individuals are motivated to use their knowledge that it creates organizational benefit, otherwise it is an idle resource.

Employee capability is the type of knowledge typically explained in response to the question: what do you know? It is the core of job interviews. It often begins with what you can do such as how long you have been doing it (experience), how good you are at it (skills), how much training you have had (qualifications), and the level of competency you have reached (knowledge). It is defined as technical knowledge. It may be referred to as "hard" competency. It may also be considered subject matter expertise. Employee capability focuses on what you have learned to do a job. Examples include disciplines such as marketing, electrical engineering, accounting, or nursing; tasks such as marketing plans, risk assessment, monthly reports, or inserting an injection; or domains (knowledge base) such as communication, mathematics, statistics, or health care.

In this paper, employee capability is conceptualized as something that tends to increase over time, often quite naturally without any intervention. For example, capability tends to increase over time as you become better at doing something (i.e. specialization); experience accrues over time, skills tend to get better with more practice (i.e. learning curve), qualifications tend to build up over time due to staff training and other organizational learning opportunities, and knowledge levels usually move forwards unless the knowledge becomes obsolete.

Therefore, employee capability is the platform for HC and, indeed, IC. It identifies the potential value of an individual for an organization. Like an IQ score is an individual's potential to learn, the employee capability score is the potential to create value from knowledge. Knowledge, like any organizational resource, only creates value when it is combined with other resources to develop organizational capabilities (Grant, 2014). In other words, knowledge creates value through its use. This explains why we describe employee capability as identified potential rather than actual value. Employee capability measures what the individual knows, at the most fundamental level, but not whether they will use it. We now turn to employee satisfaction and commitment to show how they combine with employee capability to determine the individual's value to the organization.

Employee satisfaction and commitment are about taking action. While employee capability may measure an individual's overall competence, it does not guarantee that the person will actually use their knowledge to create value for the firm. Employee satisfaction and commitment refer to the individual's emotional relationship with the organization and help us understand whether they will use and share their knowledge. Brilliant people, i.e. individuals with very high technical knowledge and even job-related knowledge, may be very unproductive if they do not want to use or share their knowledge due to a low PC score (i.e. they are unhappy). Employee satisfaction and employee commitment address an inherent weakness in IC theory, that is, it does not cater to changes in cognition or behaviour (Bontis, 2002). Employee satisfaction and commitment identify individual-level motivation barriers (e.g. locus of control), as well as barriers created by the organization (e.g. calculative reward), and management (e.g. trust).

Employee satisfaction is less obvious to others. It is about whether the individual is happy at the firm. Employee satisfaction does more than identify whether people they

like what they do. It measures how they feel about the place where they work. For example, an individual might like being an accountant but hate where they work as an accountant. It is this emotional relationship with the firm that is often hidden from others and can lead to a lack of creativity and sharing necessary to generate value from employee capability.

Employee commitment is the least obvious of our HC constructs. It measures whether the individual is likely to stay at their organization. Individuals who feel they have a long-term future at their organization are more likely to commit to behaviours and attitudes aligned with its goals and success. These individuals are more likely to cooperate with management, engage in change, share experience, and grow their organization-specific capabilities. In other words, they are knowledge workers that can improve an organization's learning organization capacity.

More details on these constructs and the literature used are provided in Table I.

Research questions

The desired outcome of this study was to examine the relationship between HC, value creation, and employee reward. This will explore how public sector organizations may use IC by focusing on strategy execution and employee compensation. The outcome is SA of the workforce which demonstrates value from IC via innovation. This involves several constructs and research questions.

The first step was to conceptualize the relationship between IC and innovation. We did this by focusing on HC. We began by measuring the value of HC in ways that could help managers understand the contribution of HC to innovation. This contribution was grounded in the individual's willingness to use their knowledge to create and share with others in the pursuit of innovation; typically new technologies, service delivery, or new processes or systems (Edvinsson *et al.*, 2004). The use of knowledge brings into play attitudes and behaviours. An individual might have very strong competence, e.g. qualifications and experience, but this knowledge might remain idle if he/she is unwilling to use it. Attitudes and behaviours may be explained by the individual's emotional relationship with their organization. This led us to propose that IC's definition of HC might be enhanced by PC factors. In this way, we contributed to Abeysekera's (2013) call for identification of "other capitals" to understand the value of IC, by extending the conceptualization of HC. Thus the first research question is:

RQ1. Do PC factors, such as employee satisfaction and employee commitment, improve our understanding of how HC contributes to innovation?

The second step was to conceptualize the relationship between IC and strategy execution. We did this by focusing on value creation. In this paper, value was defined by the work activities performed by employees. The resource-based view of the firm and the knowledge based view of the firm (see Grant, 2014) help us understand that HC creates value for the organization by combining with other resources to generate capabilities. The value created is heterogeneous depending upon the organizational context and the activity. This allowed us to differentiate between activities in terms of their importance. Thus the second research question is:

RQ2. Is there any relationship between (conventional) HC and the value of work created for the organization?

Work activity also has a relationship with employee motivation. Psychometric theory introduces factors such as locus of control (Porter *et al.*, 1973) and personal outcome

Table I.
Independent variables definitions, items, and reliability

Measure	Definition	Example items	Previous reliability testing	Our reliability testing
Employee capability (HC1)				
Qualifications	Qualification was measured by the number of qualifications and their ranking points. The logic is that the more qualifications the better, but they have to be relevant. Ranking measures relevance in terms of the individual's current job, as well as the time required to gain the qualification. Qualifications were allocated points – the more relevant and the longer to study – the more points. Employees with more relevant qualifications are more valuable	Trade certificates: 5 points for each certificate. Maximum of 25 points Undergraduate university degree: 75 points for a relevant degree (i.e. engineering/ technology/computer), 50 points for a non-relevant degree	No previous empirical testing	Face validity was used
Experience	Experience was measured by the length of time necessary to learn the job (incumbent experience), how difficult it is to learn the job (understanding) and how difficult it is to teach the job (transmission). Employees with experience, in jobs where tacit knowledge is important, are more valuable	"Work experience aside, what proportion of your job could be done by an unskilled worker?" "If another person of similar qualifications but limited workplace experience was in your job, what proportion of it would they be able to learn by reading documentation?"	No previous empirical testing	Found to have satisfactory coefficient α's of 0.77
Skills	Skills was measured by six factors: staff quality, personal efficacy, professional capabilities, learning goal orientation, learning motivation, and learning confidence. The logic was that skills involve a combination of current capability and willingness to increase that capability through continual learning. The first three factors represent current capability, while the second three factors represent future capability or willingness to learn/increase current capability. Employees with high skill levels, and willingness to increase those skills further, are more valuable	"I have confidence in my ability to do my job" "I am able to deliver the quality of service expected by my customers" "I am keen to use the learning and development opportunities available to me"	No previous empirical testing	Found to have satisfactory coefficient α's of 0.83

(*continued*)

Table I.

Measure	Definition	Example items	Previous reliability testing	Our reliability testing
Knowledge	Knowledge is measured by self-assessment (levels of knowledge by activity on a scale of 1-9), the degree of tacitness of their knowledge, the level of complexity of the knowledge, and level of consistent interpretation with other subject matter experts about the nature of the knowledge. In this way, the questions measure respondents' perspective about their knowledge in the work they do but was also validated by the responses of other people doing this work. Employees with high knowledge levels, validated by consistent interpretation with other staff, are more valuable	Rate competence in activities using a nine step level, e.g. Level 3: know basics of what to do: can explain how to do the activity in very basic terms. Level 6: can control performance (i.e. do it consistently well): show good awareness of impact of having done a good job validated by peer assessment	No previous empirical testing	Face validity was used
Employee satisfaction (HC2)				
Affective attachment	Affective attachment measures the emotional relationship between the employee and the organization. The stronger the attachment, the more the individual is satisfied. It measures whether people like their organization, reflecting the difference between what the employees want from their job and what they perceive it as offering. Employees with high affective attachment levels – who really like where they work – are more valuable	"I feel a strong sense of belonging to the RPO" "I would be happy to work at the RPO until I retire"	Eisenberger *et al.* (1990) reported high internal validity. The α-coefficients ranged from 0.81 to 0.89	Found to have satisfactory coefficient α of 0.92
Locus of control	Locus of control concerns people's perceived control of their lives. People who hold expectancies that they can or cannot control their work life are considered to be internals, and people who hold expectancies that outside forces or luck controls their work are considered to be externals. Individuals with an external focus of control, who do not believe they can control important aspects of their environments, will find the work environment to be more threatening and stressful. Employees with high locus of control – i.e. internals (people who feel in charge of their work life/destiny) – are more valuable	"A job is what you make of it" "Most employees have more influence on their supervisors than they think they do"	Spector's (1988) scale is considered the standard instrument on locus of control	Found to have reasonable coefficient α of 0.66

(*continued*)

Measure	Definition	Example items	Previous reliability testing	Our reliability testing
Calculative reward	This is called Expectancy 2 Theory. Expectancy Theory 2 is grounded in the logic that "if I work hard, I will be rewarded". It measures whether people are willing to work hard for their organization because they feel they will be rewarded. It is often called extrinsic rewards. Employees with high calculative reward levels are more valuable	"It is more likely that I will be given a pay raise or promotion by the RPO if I do high quality work" "Getting work done on time is rewarded by the RPO"	Eisenberger *et al.* (1990) found α-coefficients from 0.81 to 0.89	Found to have satisfactory coefficient α of 0.76
Calculative approval	This is also called Expectancy 2 Theory. Expectancy Theory 2 is grounded in the logic that "if I work hard, I will be recognized". It measures whether people are willing to work hard for their organization because they feel they will be recognized. It is often called intrinsic rewards. Employees with high calculative approval levels are more valuable	"My immediate supervisor pays added attention to the opinions of the best workers"	Eisenberger *et al.* (1990) found α-coefficients from 0.81 to 0.89	Found to have satisfactory coefficient α of 0.76
Personal outcome expectancy	This is called Expectancy 1 Theory. Expectancy Theory 1 is grounded in the logic that "if I work hard (effort), I will achieve high performance". It measures whether the individual feels their work makes a difference, and is therefore connected to self-esteem, belief in ability, and past experiences. Employees with high performance outcome expectancy levels, those who feel their work is important and meaningful, are more valuable	"Making deadlines is easy for me" "My work evaluations are accurate"	Riggs *et al.* (1994) reported factor loadings between 0.53 and 0.78	Found to have reasonable coefficient α of 0.64
Employee commitment (HC 3)				
Trust	Trust was measured people's trust in their employer. High trust indicates a strong positive relationship between the individual and their organization, high organizational commitment, and more willingness to stay. Employees with high trust levels are more valuable	"The RPO is open and upfront with me", "I believe the RPO has high integrity"	Robinson and Rousseau (1994) reported an overall α of 0.93	Found to have satisfactory coefficient α of 0.84
Careerism	Careerism measures people's orientation towards their employer as a stepping stone up the career path. High careerism sees the organization as a stepping stone and individuals focus more on short-term rewards such as pay, training and credentials, while low careerism focuses on the relationship with the organization. Employees with low careerism levels are more valuable	"I would accept almost any type of job assignment in order to keep working for the RPO", "For me the RPO is the best of organization I could work for"	Robinson and Rousseau (1994) reported an overall α of 0.78	Found to have satisfactory coefficient α of 0.74

Table I.

expectancy to measure employees' sense of autonomy and whether they feel their work is important and has meaning. The human resource management literature's job enrichment theory helps link our value factor – work activity – with the PC factors. This literature argues that opportunities to work on challenging assignments or difficult work are positively related to organizational commitment and intention to stay (Chew and Chan, 2008). For example, studies involving technical workers (e.g. Workman and Bommer, 2004) have found that employees who are offered challenging, exciting, and interesting work tend to be more involved and satisfied, and are in turn more committed to their organization and are less likely to leave their organization. Research has found that employees might hold such attitudes because it indicates good career management leading to a fulfilment of PC (Sturges *et al.*, 2005). Thus the third research question is:

RQ3. Is there any relationship between PC factors, such as employee satisfaction and employee commitment, and the value of work created for the organization?

The third step was to conceptualize the relationship between IC and employee compensation. We did this by focusing on pay scales. Pay is defined as the wages, salary, or compensation given to an employee in exchange for services the employee performs for the organization (Phillips and Connell, 2003). Research has found that pay is an implied agreement between an employer and an employee which recognizes the individual's value to the organization (Chew and Chan, 2008). In this way, pay is a proxy for how the organization values HC. Organizations need a pay system that is fair, equitable, and competitive (Phillips and Connell, 2003). From an IC perspective, people need to be rewarded for their competencies. In the public sector, this is typically done by pay schedules, which is the pay at various levels in the organization, which is published and transparent.

There are two ways that IC can deliver value in terms of employee compensation: equity and employee turnover. IC can assist managers and employees see equity in their pay by measuring competencies. If employees perceive inequity, there will be dissatisfaction with pay which is one of the main causes of employee turnover. IC can help by ensuring employee performance is linked to pay, thereby reducing inequity and ET. Thus the fourth research question is:

RQ4. Is there any relationship between (conventional) HC and employee compensation?

Equity involves employee perceptions about the fairness of pay and whether they feel they are being paid what they are worth in comparison to colleagues. Inequity suggests unfairness and leads to employee turnover. Although pay is recognized as an antecedent of organizational commitment and intention to stay, research has found that pay alone is not sufficient (Chew and Chan, 2008) and intrinsic factors also contribute. We see this as employees need to be recognized and rewarded for their motivation (employee satisfaction) and organizational commitment. Therefore, this provides a link between our reward factor – pay – and the PC factors. Thus the fifth research question is:

RQ5. Is there any relationship between PC factors, such as employee satisfaction, employee commitment, and employee compensation?

Now that the questions needing examination have been identified, the manner in which the study will be conducted and the source of our data must be outlined in relation to

the framework of these five questions. We build connections between HC, SA, and innovation via two output variables: pay and work activity. Work activity is the measure of value created by HC. Pay is the measure of the organization's reward to employees for creating this value. SA is achieved if the right people are focused on the right activities at the right time and they are rewarded appropriately for doing so. Innovation and efficiency will then result. Strategic misalignment occurs if employee capability and PC do not match work activity and or pay does not match the value created. The result is then demotivation, unproductivity, and employee turnover. The public sector presents an interesting challenge for this study, particularly because pay is something that is usually fixed to a schedule, e.g. an award, and allows managers little flexibility. An important question is whether public sector pay schedules pose a barrier for achieving SA from HC. This can be seen in Figure 1.

Methodology

Research project

The study was funded by the Australian Research Council and a large public sector department. It aimed to measure and manage the impact of organizational knowledge loss. The organization participating in the study was selected because it was a knowledge-intensive organization, with an ageing workforce. In terms of the justification for the study, the research project was a large-scale longitudinal study of organizational change. It is rare for researchers to gain deep access to organization over a period of six years. This provided rich empirical data which allowed us to track change over the life of the project (2008-2013). IC was not the focus of the project; it was simply part of a much broader project. The first purpose of the project was to develop measures to understand the nature of knowledge loss. The second purpose was to introduce a range of research interventions designed to manage the impact of knowledge loss. A third purpose was to evaluate the relationships between the first and

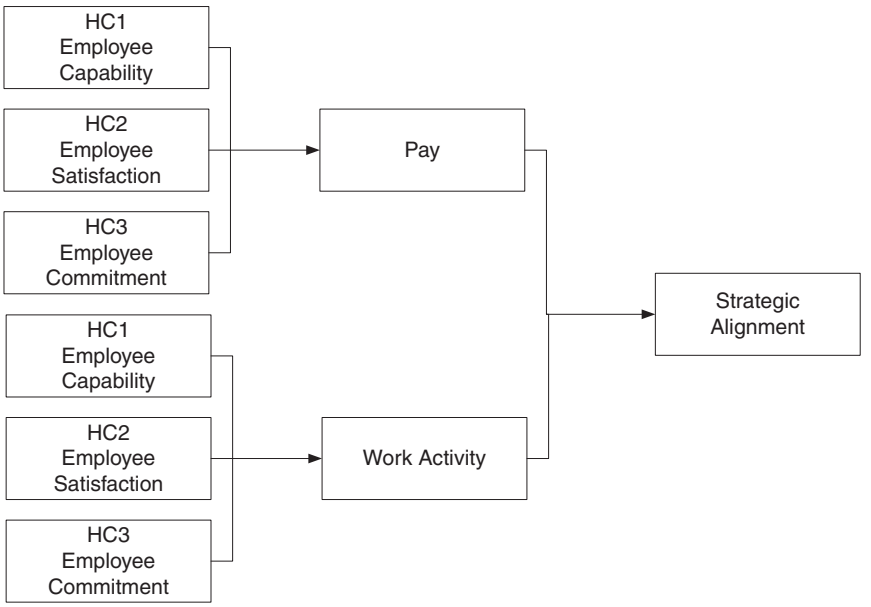

Figure 1.
Human capital value conceptual model

second parts, that is, to track how well the interventions were doing against the measurement indicators. This was a very big project which produced much data and findings. The results presented in this paper represent just one set of data. The IC in practice is mainly positioned within the first part – a component of the measurement of knowledge loss – but also linked to the second (managing) and third (performance) parts via our attempts here to explain how IC is useful to managers. The themes explored later in this paper, such as productivity, motivation, morale, employee turnover, are all very relevant to the broader aims of the research project. This situates the findings presented in this paper within the very real context of public sector managers using IC to deal with significant organizational problems.

The study involved three annual surveys. An invitation and cover letter explaining the study and assuring confidentiality were sent via e-mail to all 150 engineering and technical staff at the RPO. Therefore, the entire population was included in the study. Respondents were asked to complete and submit the surveys online. Both management and staff participated in the survey. The survey was conducted in late 2009, 2010, and 2011. This allowed the survey results to be tracked over time and for the validity of the constructs to be tested in a three-year longitudinal empirical study. The response rates were 79 per cent (2009), 46 per cent (2010), and 72 per cent (2011). These were excellent participation rates given the study was entirely voluntary and the survey was onerous, i.e. it took seven hours online to complete. The lower participation in 2010 was due to organizational upheaval caused by a restructure. The survey results were analysed and the findings reported to management.

Measures

A survey was designed that draws on the IC and the psychometric literatures, within the context of the literature review and the conceptual model. Previous instruments were replicated, wherever possible. For the majority of the questions, respondents were asked to indicate the extent of their agreement on a six-point Likert scale (1 = strongly disagree, 6 = strongly agree). Scale items with low item-total correlations (below 0.3) were omitted to obtain the satisfactory construct reliability with Cronbach's α of 0.7 or above (Nunally, 1978). Principle component analysis with varimax rotation (where necessary) was run to check the construct validity (Hair *et al.*, 1995). Items with factor loadings lower than 0.3 were deleted to improve the validity.

With this framework in mind, the manner in which the data was collected and processed to answer the questions posed is now explained.

Data collection and processing

There are two dependent variables in this study: pay scale and activity level. Pay scale was reported directly from the respondents as their annual salary before taxes in dollars. Activity level was measured by combining importance by time spent. Importance was measured by asking RPO executive managers to rate 128 activities performed by employees on a five point scale, where 1 = not important and 5 = critical importance. The ratings were based on perception of the value created for the organization using the principles of distinctive and core competence. Respondents were asked to indicate how much time they spent on each activity. An activity score out of 100 was then calculated by multiplying time spent by importance rating. For example, an individual spending 100 per cent of time on level 5 activities gets a score of 100; an individual spending 50 per cent of time on level 5 activities and 50 per cent on level 4

activities gets a score of 90; an individual spending 40 per cent of time on level 3 activities, 30 per cent on level 2, and 30 per cent on level 1 gets a score of 42, and so on. Employees spending a high proportion of their time on very important activities are more valuable. For both dependent variables – pay and activity – face value validity was used based on expert opinion, i.e. the RPO executive.

The independent variables in this study are the three types of HC which are labelled as *HC*1, *HC*2, and *HC*3 to represent employee capability, employee satisfaction, and employee commitment, respectively. In most cases, six-point Likert scale anchored from strongly disagree to strongly agree were used. Items were averaged to form an index. This paper is not about measuring the value if IC. We use a scoring method based on recent research (Massingham, 2015) only to provide the data for our conceptualization of HC. Scores out of 100 are then able to be allocated based on the value of the individual's knowledge. Please refer to Table I above for further details of the measures.

Analysis

In order to test our hypotheses, the data collected in this study was analyzed through the use of bivariate correlation and linear regression using SPSS software. We begin with descriptive and correlation statistics.

Table II reports the descriptive statistics of the study. The average annual salary was AUD$86,241 with a standard deviation of AUD$23,223. The average activity level was 52.26 with a standard deviation of 15.86. The mean levels of the employee capability, employee satisfaction, and employee commitment HC dimensions were 53.86 per cent (SD = 9.79), 62.62 (SD = 10.64), and 65.29 (SD = 13.81), respectively. The averages of the independent variables ranged from 31.5 to 74.51 per cent.

Table III also presents the Pearson bivariate correlation among the independent and dependent variables. Multi-collinearity is not a concern in this study as the maximum Pearson correlation values are below the critical value of 0.8 (Hair *et al.*, 1995).

Pay scale and activity level were used as dependent variables in two separate regression models with the same independent variables as shown in the model above.

The main linear regression model is:

$$DV = \alpha + \beta_1 HC1 + \beta_2 HC2 + \beta_3 HC3 + e$$

Question 1:

H1a. Effect of PC and innovation.

This hypothesis will test the first research question and is presented as follows:

H0. The HC1 score, the HC2 score, and the HC3 scores are not all positively related to activity level.

HA. The HC1 score, the HC2 score, and the HC3 scores are all positively related to activity level.

As shown in the results above in Table III, employee capability (HC1) and employee satisfaction (HC2) have significant and positive relationships (employee capability: $t = 3.20$, $p < 0.001$; employee satisfaction: $t = 3.98$, $p < 0.001$) with activity level while employee commitment (HC3) has significant but negative relationship with activity level ($t = -2.60$, $p < 0.001$).

Table II.
Correlation statistics

	Mean (SD)	1	2	3	4	5	6	7	8	9	10	11
1 Qual	31.50 (18.17)	1	0.11	0.21**	0.03	−0.07	0.17**	0.29**	0.23**	−0.02	−0.02	−0.01
2 Experience	49.73 (21.82)			0.27**	0.15*	0.04	0.23**	0.33**	0.13*	0.02	0.19**	0.14*
3 Skill	74.51 (10.52)				0.20**	0.30**	0.35**	0.13*	0.14*	0.36**	0.36**	0.35**
4 Knowledge	59.69 (12.99)					−0.01	0.09	0.13*	0.12	0.02	0.06	0.03
5 AffAtt	60.78 (16.36)						0.39**	−0.13*	0.01	0.39**	0.58**	0.67**
6 Locus of control	68.28 (13.37)							0.52**	0.25**	0.47**	0.37**	0.50**
7 CalRew	55.95 (21.57)								0.40**	0.19*	0.11	0.10
8 CalApp	61.23 (21.75)									0.07	0.05	0.05
9 PersOut	66.86 (11.40)										0.40**	0.50**
10 Careerism	58.88 (14.38)											0.55**
11 Trust	71.74 (15.73)											1
Pay scale	86,241 (23,223)	−0.22**	0.23**	0.17**	0.23**	0.09	0.27**	0.25**	−0.07	0.02	0.06	0.16**
Activity	52.26 (15.86)	0.12	0.30**	0.11	0.09	−0.28**	0.24**	0.56**	0.17**	0.05	0.08	−0.04

Notes: $^{**}p < 0.01$; $^{*}p < 0.05$

Table III. Multiple regression results

Independent variables	Dependent variables: Pay scale Coefficient	Pay scale *t*-Statistic	Activity level Coefficient	Activity level *t*-Statistic
Employee capability (HC1)	652.44	4.12***	0.34	3.20**
Employee satisfaction (HC2)	49.21	0.29	0.44	3.98***
Employee commitment (HC3)	93.15	0.76	−0.21	−2.60***
Model summary				
Adjusted R^2		0.08		0.13
F-value		8.16***		13.00***

Notes: ***$p < 0.001$; **$p < 0.01$

These results provide support to the null hypothesis and for concluding that not all HC scores have a positive relationship with activity level. All three HC scores have significant impact on value creation for the organization. More specifically, we found that the more capable the individual is or the happier the individual is at work, the more likely they are to spending more time doing more important work, i.e., creating more value for their organization. On the other hand, the more committed an individual is, the individual is more likely to spend more time doing less important work. This latter result is counter-intuitive as we would expect that committed individuals would be doing important work. However, it is explained by a peculiar aspect of the RSO sample: respondents with higher commitment tended to be younger and more junior employees doing less important work (due to inexperience); while respondents with lower commitment tended to be older and more senior and were doing more important work (due to experience). This occurred because many of the latter group of respondents intended to retire which meant they had low commitment in terms of their future with the organization. This is explained further later (see *H3b*):

H1b. Effect of PC and innovation.

This hypothesis will also test the first research question and is presented as follows:

H0. The HC1 score, the HC2 score, and the HC3 scores are not all positively related to pay scales.

HA. The HC1 score, the HC2 score, and the HC3 scores are all positively related to pay scales.

As shown in Table III, employee capability is the only HC that has significant and positive relationship with pay scales ($t = 4.118$, $p < 0.001$). Employee satisfaction ($t = 0.29$, $p > 0.77$) and employee commitment ($t = 0.76$, $p > 0.44$) have positive relationships with pay scales. However, the positive relationships are not statistically significant. Therefore, there is not sufficient support to reject the null hypothesis. The results show that the higher the individual employee's capability is, the more likely the individual will be rewarded. However, the levels of how satisfied or how committed an individual is with the organization do not have significant impact on the likelihood of being rewarded for their work.

Question 2:

H2. Effect of (conventional) HC and value creation (activity).

This hypothesis will test the second research question and is presented as follows:

H0. The HC1 score, i.e. overall mean score for employee capability, is not positively related to activity level.

HA. The HC1 score, i.e. overall mean score for employee capability, is positively related to activity level.

These results provide support for rejecting the null hypothesis and for concluding that there is a positive relationship between employee capability and activity level. In other words, the higher the individual's capability, the more likely they are to spend more time doing important work, i.e. creating value for their organization.

This finding is consistent with conventional views of human resource management. Employees are usually allocated more complex work as they gain experience, qualifications, and competency. The typical perception of HC – employee capability (HC1) – has a significant and positive impact in predicting activity level.

Question 3:

H3a. Effect of PC and value creation (activity).

This hypothesis will test the third research question and is presented as follows:

H0. The HC2 score, i.e. the overall mean score for employee satisfaction, is not positively related to activity level.

HA. The HC2 score, i.e. the overall mean score for employee satisfaction, is positively related to activity level.

Employee satisfaction (HC2) was statistically significant in predicting activity level, and had positive impact.

These results provide support for rejecting the null hypothesis and for concluding that there is a positive relationship between employee satisfaction and activity level. In other words, the happier the individual is at work, the more likely they are to spend more time doing important work, i.e. creating value for their organization:

H3b. Effect of PC and value creation (activity).

This hypothesis will also test the third research question and is presented as follows:

H0. The HC3 score, i.e. the overall mean score for employee commitment, is not positively related to activity level.

HA. The HC3 score, i.e. the overall mean score for employee commitment, is positively related to activity level.

Employee commitment (HC3) showed a significant and negative impact on the amount of time that employees spent on more important tasks.

Therefore, these results provide support for the null hypothesis and for concluding that there is not a positive relationship between employee commitment and activity level.

This finding is counter-intuitive and is explained by the peculiar nature of the workforce at the RPO. As many of the most experienced staff were due to retire, their commitment to the organization was low. They answered questions like "will you be working at the RPO in five years?" with no. However, as the most capable staff, they were given the most important activities to do. On the other hand, younger staff who

were more likely to answer the above question with yes, were doing less important work because they were less capable, not because of their commitment levels.

Question 4:

H4. Effect of HC and employee compensation (pay).

This hypothesis will test the fourth research question and is presented as follows:

H0. The HC1 score, i.e. overall mean score for employee capability, is not positively related to pay scales.

HA. The HC1 score, i.e. overall mean score for employee capability, is positively related to pay scales.

These results provide support for rejecting the null hypothesis and for concluding that there is a positive relationship between employee capability and pay scales. In other words, the higher the individual's capability, the more likely they are to be paid more, i.e. being rewarded for creating value for their organization.

This finding is consistent with conventional views of human resource management, where there must be a clear link between organizational performance and the pay structure (Phillips and Connell, 2003). The typical perception of human capital – employee capability (HC1) – has a significant and positive impact in predicting pay scales.

Question 5:

H5a. Effect of PC and employee compensation (pay).

This hypothesis will test the fifth research question and is presented as follows:

H0. The HC2 score, i.e. the overall mean score for employee satisfaction, is not positively related to pay scales.

HA. The HC2 score, i.e. the overall mean score for employee satisfaction, is positively related to pay scales.

Employee satisfaction (HC2) showed a positive though not significant impact on pay scales.

These results do not provide support to reject the null hypothesis, and conclude that there is a positive relationship between employee satisfaction and pay scales, but this positive relationship is not statistically significant. In other words, there is no significant relationship between how happy the individual is at work and the likelihood they are to be rewarded for resulting positive work attitudes and behaviours. Individuals at high pay scales could be as happy as those at low pay scales, and vice versa; there was no clear pattern:

H5b. Effect of PC and employee compensation (pay).

This hypothesis will also test the fifth research question and is presented as follows:

H0. The HC3 score, i.e. the overall mean score for employee commitment, is positively related to pay scales.

HA. The HC3 score, i.e. the overall mean score for employee commitment, is not positively related to pay scales.

Employee commitment (HC3) showed a positive but insignificant impact on pay scales.

These results do not provide sufficient support for rejecting the null hypothesis, and conclude that there is a positive though not significant relationship between employee commitment and pay scales. In other words, the level of the individual to commit to work at the organization in the future does not have impact on the likelihood they are to be rewarded for creating value for their organization.

This finding is counter-intuitive and is also explained by the peculiar nature of the workforce at the RPO, as explained above.

There are two significant findings from the regression analyses as shown in Table III. The first crucial finding is that when predicting the value of work created by HC (i.e. activity levels), the employee capability and PC are both important. The results showed that, employees with higher level of PC would be more motivated to work on important tasks; particularly those employees with high employee satisfaction (HC2). This is an important finding which confirms the importance of employee morale on productivity. It provides IC theory with managerial application by allowing measurement of morale (HC2) and a way to link this with productivity (activity).

The second crucial finding is, when predicting pay scale, HC1 is the only significant variable. That is, consistent with conventional belief; an employee with higher level of basic HC such as more experience, higher level of skills, or knowledge, would be regarded as a more contributing member of the organization and therefore rewarded with higher level of salary. However, there is no positive relationship between the two PC variables – employee satisfaction (HC2) and employee commitment (HC3) – and pay. Employee commitment actually has a significant negative relationship with pay, however, this occurs when significant proportions of senior staff are ready to retire and may be explained as normal organizational behaviour for those with an ageing workforce demographic. However, the finding that employee satisfaction has no relationship with pay scales is concerning within the context of the conceptualization of HC presented in this paper. The implications are discussed next.

Discussion

The literature review identified several themes. We began by examining current research directions in IC. We focused on practice and how IC can be used to help managers; particularly how IC conceptualizations can help manage IC resources (as opposed to measure resources). The proxy for managing IC resources used in this paper is improved employee compensation. This is one of the five main reasons why organizations measure and report their IC (Marr, 2003). The benefit for managers in using our conceptualization of IC to improve employee compensation is SA.

Given this special issue of the *JIC* examines the public sector, we then turned to relevant literature in this domain. We argued that our conceptualization of HC will have most benefit for the public sector in terms of increased innovation. Using Dumay and Rooney's (2011) study of Lands as the platform, we feel that IC can most help the public sector by improving organizational learning. For example, Lands focused on narratives of achievement as a way to report on how the organization was learning and, therefore, growing its IC. In our experience, public sector organizations are increasingly using performance management scorecards, such as the BSC. The L&G dimension of the BSC is the weakest of the four dimensions; in terms of empirical evidence on how to measure and manage its performance. We position our HC conceptualization as a way to improve the L&G dimension of the BSC. This provides our method with a "home", i.e., BSC reporting, and a tangible organizational benefit, i.e. increased creativity and innovation. The link to SA provides a further framework for managers

to see how to use our HC conceptualization for organizational benefit. The challenge for the public sector in this discussion is how to act on the issues underlying SA found in this paper, i.e. how can an organization often constrained by employee compensation rules (i.e. award payments) attain SA? We argue that the public sector must consider more flexible pay systems, such as merit increases and variable pay (see Arthur, 2001) in order to achieve distributive and procedural justice for its employees. Otherwise public sector organizations will continue to suffer strategic misalignment and unsatisfactory creativity and innovation.

Finally, we presented literature on conventional views of HC and our new conceptualization of HC. Our conceptualization has an action focus. While our first HC construct – employee capability (HC1) – establishes the potential of an individual to create value for their organization, the two other constructs – employee satisfaction (HC2) and employee commitment (HC3) – establish the individual's willingness to use their capability to benefit the organization. This conceptualization links with the other themes in the literature review in this way. First, we argue that improved employee compensation will increase employee satisfaction and employee commitment. People who perceive distributive and procedural justice in employee compensation will be happier and want to stay. They will, therefore, use their HC to create value for their organization via increased creativity and innovation. Second, the HC conceptualization will measure the organization's learning performance and also enable growth in performance. This may occur by using the HC conceptualization to understand the SA of the workforce. Misalignment means unsatisfactory employee compensation and, therefore, low scores in either HC2 (employee satisfaction) or HC3 (employee commitment) or both. Our conceptualization provides managers with the tools to take action, i.e., IC in practice, to attain SA and then increase creativity and innovation.

Next, we present the overall findings against the five research questions within the context of the themes from the literature review outlined above; then draw general conclusions; and finally look at managerial implications.

RQ1

The paper's first finding is partial support that PC has a direct positive relationship with innovation. The results show that *H1a* and *H1b* are partially supported (two of the three variables). This indicates the individual's emotional relationship with the organization – PC measured by employee satisfaction (HC2) – has a positive and significant relationship with employee capability (HC1) and the way the individual is recognized (activity) for creating value for the organization. However, there is no significant positive relationship in the way the individual is rewarded (pay scales) for creating value for the organization.

The latter finding reveals a significant problem for the RPO. The relationship between the study's dependent and independent variables indicates partial SA. The outcome of SA is innovation, that is, positive use of the organizations HC to generate creativity, sharing, and usage of employee capability. While there is good news for the RPO in terms of how it gets value from its staff (HC1, HC2, and activity); it is not adequately rewarding staff for value (HC1, HC2, and pay). This indicates strategic misalignment due to distributive injustice in employee compensation. This could lead to low morale, motivation, productivity, and employee turnover.

RQ2

The paper's second finding is that employee capability (HC1) had a direct positive relationship with the work activity level. This supports *H2*. This means that IC in

practice may use the employee capability (HC1) measurement presented in this paper to ensure the right people are doing the right work. This will improve productivity.

RQ3

The paper's third finding is that employee satisfaction (HC2) had a direct positive relationship with the work activity level. This supports hypotheses *H3a*. This means that IC in practice may use the employee satisfaction (HC2) measurement presented in this paper to ensure job satisfaction is created from people doing the right work. This will reduce employee turnover.

The paper's fourth finding is that employee commitment (HC3) had a direct negative relationship with work activity level. This does not support hypothesis *H3b*. This means that IC in practice may use the employee commitment HC3 measurement presented in this paper to ensure people who intend to leave the organization are not doing important work. This will reduce corporate risk of poor performance in important activities.

RQ4

The paper's fifth finding is that employee capability (HC1) has a direct positive relationship with pay. This supports hypothesis *H4*. This means that IC in practice may use the employee capability (HC1) measurement presented in this paper to ensure people are rewarded for creating value from their work. This will improve motivation.

RQ5

The paper's sixth finding is that employee satisfaction (HC2) and employee commitment (HC3) had no relationship with pay. This does not support hypotheses *H5a* and *H5b*. This means that IC in practice may use the employee satisfaction (HC2) and employee commitment (HC3) measurements presented in this paper as opportunities for further research about ensuring people are rewarded for their attitude (employee satisfaction) and loyalty (employee commitment). This will improve organizational culture.

The RPO is Australia's second largest government department. It has some very interesting characteristics which may be shared by other public sector organizations and make the results more generalizable including:

- a skilled workforce;
- an ageing workforce;
- strong vocational commitment and sense of job-related identity from employees;
- a bureaucratic organizational structure and control system; and
- the threat of knowledge loss.

The results of this research project investigating the HC within the RPO are informative for public sector managers; particularly those with the characteristics listed above. If they can be summarized generally, the statistical analysis demonstrated three main findings. First, the disaggregation of HC into three factors: HC1 (employee capability), HC2 (employee satisfaction), and HC3 (employee sustainability/commitment) proved helpful in understanding how HC may be managed. This contributes to the agenda for research into IC in practice by introducing three new "other factors" to help operationalize IC and make it more relevant for practitioners.

Second, the results showed that there is a positive relationship between two of the three HC constructs and the input for organizational value (work activity). This means that employees that have capability and motivation will want to work on important work activities, therefore creating value for the organization. The highest value employees, in terms of HC as we define it in this paper, worked on the highest value creating activities for the RPO, thereby creating SA (e.g. see Kaplan and Norton, 2006). They had the right people with the right knowledge in the right jobs.

On the other hand, there was a direct negative relationship between employee commitment and work activity. This is surprising because we expected that employees with strong commitment would do the highest value activities. Yet the reverse occurred at the RPO. Those with the weakest organizational commitment were doing the most important work. However, on closer examination, the finding makes sense. Over the course of the data gathering (surveys) (2009-2011), the RPO lost a significant proportion of its most experienced staff due to retirement. These employees spent most of their time doing the most important work because of their experience. Understandably, given they were due to retire, their long-term commitment towards the organization was low.

Third, the results show a conflicting relationship between the three HC constructs and the output for organizational value (pay). While the RPO had a direct positive relationship between HC1 and pay, there was no relationship between the other HC constructs – HC2 and HC3. This means that while employees are doing the work they should, and the RPO is getting maximum value from its staff; they are not being equitably rewarded. In other words, there are employees who are happy, motivated, committed, and productive, who are getting paid less than employees who are unhappy, unmotivated, uncommitted, and unproductive. This may create perceptions of inequity.

Employees have two major needs with regard to pay. The first is for pay to be distributed equitably within the organization (Phillips and Connell, 2003). This is called distributive justice. If employees feel that the organization has a fair distribution of pay, the employees' intent to leave is lower than those who feel pay is unfairly distributed (Phillips and Connell, 2000). Second, employees need to understand the process through which pay is administered. If problems with the administration and delivery of pay occur, employees need to be able to address organizational procedures. This is called procedural justice. This addresses employees' perception about pay inequality and the extent to which employees understand how performance affects salary. Procedural justice occurs when employees have the right to appeal unfair pay practices.

Managerial application

Our discussion then focuses on how our HC model may be used in the public sector to improve innovation. We suggest that the research presented in this paper has three main implications for public sector managers. We present new ways to measure the value of staff, align the workforce, and reward value creation. If public sector managers adopt the HC model presented here, improved innovation should occur via increased IC efficiency; more specifically, increased motivation and employee retention. Each of these implications are discussed separately.

The first implication from this paper is that public sector managers can use the HC model to measure the value of staff in a new way. In our experience at the RPO, the Australian public sector measures staff in terms of numbers and cost, i.e., staff salary budget. Employee capability is the way that the public sector typically recognizes the

value of its employees via salary and seniority. The research findings confirm that employee capability is an effective measure. There was a direct positive relationship between employee capability and pay, and between employee capability and work activity. This means that the RPO correctly matched employee capability with the value created by employees (work) and how they were rewarded for this activity (work). Employees were allocated more important work and were given higher pay as they gain higher employee capability scores. However, our new conceptualization of HC showed that the PC is also important in measuring the value of employees. The two PC factors combine to motivate employees to use their HC1 to create value for the organization. Evidence was provided by the fact the two PC factors also had a direct positive relationship with value creation (work activity).

The second implication was that the HC model presented in this paper may help public sector organizations achieve SA of their workforce. SA is most commonly discussed in the literature as a tool to formulate and implement a corporate strategy. Tools such as Activity Based Costing and the BSC Kaplan and Norton (1996, 2006) are proposed as effective management control systems that enable strategy implementation. In the public sector, control is important as a means of ensuring employees provide service delivery the organization is being funded for and that they follow standard operating procedures and work correctly. SA tools provide information to monitor whether the organization is achieving its strategic goals (Senshu and Souissi, 2012). From an organization-wide perspective, the main practical outcome of SA is synergy. Synergy is created by business units combining to produce more value for the organization than the sum of their individual parts, i.e. 1+1 = more than 2. Alignment ensures there is minimal waste, duplication, and also organizational learning benefits. The research findings found that the RPO had SA, in the sense that there was a direct positive relationship between HC1 and HC2 and work activity. This means that the RPO correctly matched employee capability (HC1) and motivation (HC2) with the value created by employees (work). SA meant that the right employees were doing the right work. However, there were problems in the findings for the third construct – employee commitment (HC3). The RPO had not correctly matched commitment with recognition (activity) or reward (pay). This meant that the third part of perfect SA was missing – the RPO did not have the right employees doing the right work at the right time. This meant the RPO was not getting maximum benefit from its HC allowing innovation. This occurred due to a peculiarity in the sample where some of the RSO's most experienced employees – who were doing the most important work due to their experience – had low commitment because they intended to retire soon. Only when it had staff with the highest organizational commitment aligned with HC1 and HC2 and activity and pay would the RPO achieve maximum benefit from SA.

The third implication was that public sector should reward employees for all three HC factors, not just HC1, or the organization risks decreased PC, decreased SA, and, ultimately, employee turnover. Many organizations have found that the sole reliance on financial measurements will lead to short-term results (Johnson and Kaplan, 1987; Kaplan and Norton, 1992) if those measures are linked to the compensation system (Bushman *et al.*, 1995). An increasing number of studies suggest that non-financial performance measures are better predictors of long-term performance and thus should be used to help refocus managers on the long-term aspects of their decisions (Ittner *et al.*, 2003). Most employees feel that they are worth more than they are actually paid (Phillips and Connell, 2003). There is a natural disparity between what people think they should be paid and what organizations spend in compensation. When the

difference becomes too great and another opportunity occurs, turnover can result. The IC in practice presented in this paper, that is, the conceptualization of HC, may address these issues and help managers improve procedural and distributive justice in terms of how employees and recognized (activity) and rewarded(pay scales) for their innovation. Organizations may reward employees for more than just employee capability (HC1). Both employee capability (HC1) and employee satisfaction (HC2) both have positive and significant effects on work activity level. The negative results of employee commitment (HC3) reflect a peculiarity in our sample (senior employees due to retire). We feel the logic that employees with strong organizational commitment should be allocated important work still applies, and this may be opportunity for further research.

In terms of pay solutions, two of the most interesting in relation to IC are merit increases and variable pay. Merit increases are annual salary increases, often following a performance evaluation, where the employees' performance is rewarded through a formal evaluation system (Arthur, 2001). Variable pay is an incentive or bonus plan designed to reward the achievement of the employee against performance objectives irrespective of pay schedule or level (Arthur, 2001). The use of pay schedules, such as awards, make it challenging for public sector organizations to introduce such schemes. However, our research findings suggest that public sector managers need to address procedural injustice in regards to pay by recognizing the PC factors and rewarding them through creative pay solutions such as merit increases or variable pay.

Conclusions

This paper aimed to contribute to the third-wave of IC research by looking at how IC is or can be used. We have focused on how managers can use HC to achieve SA. By introducing PC as "other factors" in the measurement of HC, we have explained how IC theory can be extended to help managers understand how to align their workforce. In showing how IC in practice can benefit public sector organizations, we have followed the direction set by Dumay and Rooney (2011), and Dumay and Tull (2011) in IC's transition from measurement to action by exploring how our conceptualization of HC can improve innovation via SA.

We contribute to this research direction in two ways. First, we improve the reporting of IC. Our HC conceptualization aimed to improve the L&G dimension of the BSC. Dumay and Rooney (2011) found that their research study organization, Lands, achieved the transition for IC from measurement to action by adapting the BSC to suit their needs. Public sector organizations are increasingly using performance management frameworks, such as the BSC, to manage and report on their strategy. This also helps them with the timeliness of IC reporting. By using our HC method to improve the BSC, public sector organizations could better report changes in the SA of their workforce. This could result in more frequent disclosure of IC and would provide higher immediacy value (see Dumay and Tull, 2007), which is particularly relevant if our aim is to improve perception of IC in practice.

Second, we contribute to the need for IC theory to help managers take action to improve their organization's performance. We feel that IC can most help the public sector by improving organizational learning. In the literature review, we stated that Dumay and Rooney (2011) pose the very interesting question: is IC measurement necessary for the effective management of IC? They link this discussion to Drucker's (1954) pioneering concept of management by objectives. The focus on measuring IC

seems to have been driven by a loose assumption that what gets measured gets managed. However, there is increasing doubt that the measurement of IC, in isolation, creates value. We address this problem by showing how managers can use our HC conceptualization to take action to track change in terms of SA and improve organizational learning. Our approach does include measurement of HC, so it answers the question above by suggesting that measurement is part of managing IC. However, the key challenge for IC research is to help managers take action. Our HC conceptualization does this by providing answers to these questions posed by managers: are employees doing the right work at the right time? If not there are competency gaps which may be addressed by targeted learning. Are employees using their HC to create value for their organization? If not their PC must be addressed.

The conceptualization of HC presented in this paper has an action focus. While the first HC construct – employee capability (HC1) – establishes the potential of an individual to create value for their organization, the two other constructs – employee satisfaction (HC2) and employee commitment (HC3) – establish the individual's willingness to use their capability to benefit the organization. This conceptualization links with the themes in the literature review in this way. First, we argue that improved employee compensation will increase employee satisfaction and employee commitment. People who perceive distributive and procedural justice in employee compensation will be happier and want to stay. They will, therefore, use their HC to create value for their organization via increased creativity and innovation. Second, the HC conceptualization will measure the organization's learning performance and also enable growth in performance. This may occur by using the HC conceptualization to understand the SA of the workforce. Misalignment means unsatisfactory employee compensation and, therefore, low scores in either HC2 (employee satisfaction) or HC3 (employee commitment) or both. Our conceptualization provides managers with the tools to take action (i.e. IC in practice) to attain SA and then increase creativity and innovation.

In summary, the paper's findings provide managers with a method to align the value created by HC (work activity) and how this is rewarded (pay). There were five research questions. *RQ1* – that PC has a direct positive relationship with innovation – was partially supported. While there is good news for the RPO in terms of how it gets value from its staff (HC1, HC2, and activity); it is not adequately rewarding staff for value (HC1, HC2, and pay). *RQ2* – that employee capability (HC1) had a direct positive relationship with the importance of work activity – was supported. *RQ3* – that PC (HC2 and HC3) has a direct positive relationship with work activity – was partially supported. Employee satisfaction (HC2) has a positive relationship with activity level; however, employee commitment (HC3) had a direct negative relationship with activity level. *RQ4* – that employee capability (HC1) has a direct positive relationship with the pay – was supported. *RQ5* – that PC (HC2 and HC3) has a direct positive relationship with the pay – was not supported. Neither employee satisfaction (HC2) nor employee commitment (HC3) had a significant positive relationship with pay scales.

IC in practice may be achieved by using these findings to create maximum value from innovation via SA of the workforce as follows: *RQ1* examines positive use of the organization's HC to generate creativity, sharing, and usage of employee capability; *RQ2* examines how to improve productivity; *RQ3* explores how to reduce employee turnover and reduce corporate risk of poor performance in important activities; *RQ4* examines how to improve motivation; and *RQ5* poses how to improve organizational culture.

The findings present an interesting dilemma. The results show that the RPO is aligned in terms of the value created by its HC. Employee capability (HC1) and motivation (HC2) are matched with the level of value they are creating, i.e. the importance of work activity. Ideally, individuals that are highest in terms of HC1, HC2, and HC3 are doing the most important work. Employees who are most able to do this work, want to do it, and see a purpose in doing it; should be spending their time in the most efficient and productive way for their organization. Alternatively, those who are less capable, motivated, and committed, should be doing less important work. Managers can use the method to measure the SA of their HC in terms of value creation (work activity).

There is a dilemma presented by the fact that the RPO's pay schedule does not match its value creation. In other words, employees are not being rewarded for their contribution to the organization's performance. We know this because only employee capability is positively related to pay. Employee satisfaction and employee commitment are not related to pay. This means that employees with strong PC may be paid less than others with weak PC. The implications become clearer when we combine pay with work activity. While these strong PC employees are being asked to do important work, they are not always being paid at the rate of colleagues doing similar work. This will create perceptions of distributive injustice (Phillips and Connell, 2003), which will make those with strong PC unhappy, thereby decreasing their PC, disrupting the SA of the value creation, and lead to employee turnover. Ultimately, the employees who have the highest HC efficiency, because they are creating most value for the least pay, may leave the organization if their sense of unfairness and inequity about their pay is not addressed. Managers can address this problem by using the HC conceptualization outlined in this paper to introduce procedural justice (Phillips and Connell, 2003) for employees to argue for higher pay. Methods such as merit increases and variable pay (Arthur, 2001) might be introduced. While this is problematic for public sector organizations often constrained by having to fit salary awards, innovative organizations are increasingly considering more flexible pay systems. This paper has suggested how public sector managers might consider strategically aligning their HC with a new focus on the emotional relationship with the organization (PC).

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Further reading

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About the authors

Dr Peter Rex Massingham is from the University of Wollongong's School of Management, Operations and Marketing within the Faculty of Business. Before joining the University in 1998, he was a Management Consultant, most recently with KPMG. He works with a range of Australian organizations on their business strategy, particularly focusing on knowledge management. Most recently he has completed a major research projects with the Australian Department of Defence on knowledge loss (2008-2013) and Saudi Arabia Government on their research institutes (2008-2012). Dr Peter Rex Massingham is the corresponding author and can be contacted at: peterm@uow.edu.au

Leona Tam is an Associate Professor of Marketing at the Faculty of Business, University of Wollongong, Australia. Her research interests lie in behavioural recurrence including habit, loyalty, and implementation plans in personal finance and health contexts. She also studies motivational consumer psychology. Her work has been published in marketing and psychology journals including *Journal of Marketing, Psychological Science*, *Journal of Personality and Social Psychology*, and *Organizational Behavior and Human Decision Processes*.

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