Rethinking Managerial Economics

Accessing the latent value of human capital.
By Katherine Bush and James Pepitone.

Business leaders face increasing uncertainty from geopolitics and policy, to regulations and labour market fluctuations[1]. As a fiduciary to stakeholders, executives are under continuous pressure to deliver earnings growth.

Among the 500 business leaders surveyed worldwide by the Conference Board in 2017, their top goal was 'creating more agile, aligned, transparent, and responsive companies'. Rather than seek disruptive analytics or business model changes, these executives planned to emphasise 'fiscal discipline, an engaged and resilient workforce, strong and inclusive leadership, and [sought to] develop and nurture talent with expanded 21st century skills' to achieve this goal[2].

Their practical approach reflects the stakes of their cause. Executives and managers are charged with driving value for shareholders throughout their organisation, while minimising its exposure to risk. These dual goals often conflict and faltering productivity persists. Conventional management wisdom suggests a structural change to reflect the growing complexity of the organisation and its operations. Since a company creates profit only when it invests capital at returns that exceed the cost of capital, it is crucial that all kinds of capital – and particularly intellectual (and human) capital – is managed to achieve maximum economic value from its investments.

Furthermore, developing strong organisation talent is crucial for success in a global market environment with fewer barriers to entry. Business leaders realise that 20th century, top-down approaches are insufficient in current advanced economies. Humans have remarkable potential for creating economic value under the right circumstances. To build a 21st century workforce, managers require better methods to foster skills development in their workers that will enhance productivity over the long term. To better understand why the old models no longer work and, more importantly, the opportunity at hand for managers who adapt, let's examine the forces of change reshaping markets and workplaces.

Factors of organisational growth and productivity

The productivity of physical work grew steadily throughout the last century, reducing the opportunity for further productivity

gains and increasing their respective costs. Technological advances dramatically reshaped the input capital requirements for the developed market economies and, as a result, positions required less physical work and more 'knowledge work'.

Such modern economy jobs that require creative thought are not readily standardised, mechanised, or automated; therefore, productivity gains are elusive. For this reason, managers need a new tact. After all, engineering this type of knowledge work can have unintended consequences and often inadvertently decreases productivity.

Fortunately, increases in the productivity of knowledge work are readily accessible. Achieving them requires a new technology of principles, processes, and methods that reflect the complex nature of human beings[3]. Let's now examine the underlying cause of lagging performance. *Figure 1*

Outdated management principles: The root of poor performance

Most positions, including those requiring knowledge work, have been standardised to suit repetitive, non-discretionary labour seldom found today. Others are unsophisticated in their design and misaligned to human nature. As such, employees are unable to contribute to their fullest potential and quickly become disengaged from their work and the mission of the organisation.

This is because a majority of management principles and processes currently in use were developed at the start of the Second Industrial Revolution, a time when more than 80% of US workers were performing manual work. The remaining sector of the workforce, those using information as capital, were limited to business owners and their close associates.

A century later, technology has reversed in an unshakable trend toward knowledge work in the developed market economies. By 2010, manual workers made up less than 20% of the workforce. A plurality of Americans now engages in information-based, white-collar professions, including technicians, analysts, designers, and managers. *Figure 2*

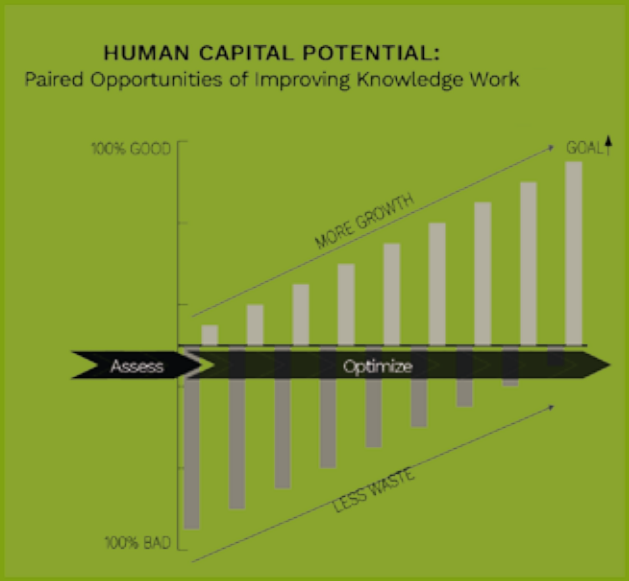
The Fourth Industrial Revolution currently underway, is changing work yet again in meaningful ways. Principally, the locus of control has shifted from task and process design to the individual worker, making it necessary to redesign human work and work environments to align with both modern realities and human nature.

The persistence of stagnating productivity and organisational problems arises from outdated management models. Given the successful protocols available, it is ironic that many of the organisations responsible for substantial societal progress – in science, medicine, technology – are still managing employees as if they were machine operators on a production line. The same technological advances by changing the nature of work have necessitated a change in management practices.

Productivity and the modern economy

Economists credit the production advances achieved during the Second Industrial Revolution for the greatest period of economic expansion. Despite two devastating world wars, this century was marked by economic growth that improved living standards, brought geopolitical stability, and allowed millions to emerge from poverty.

This golden age of growth resulted from highly prescriptive management practices and was characterised by a compound



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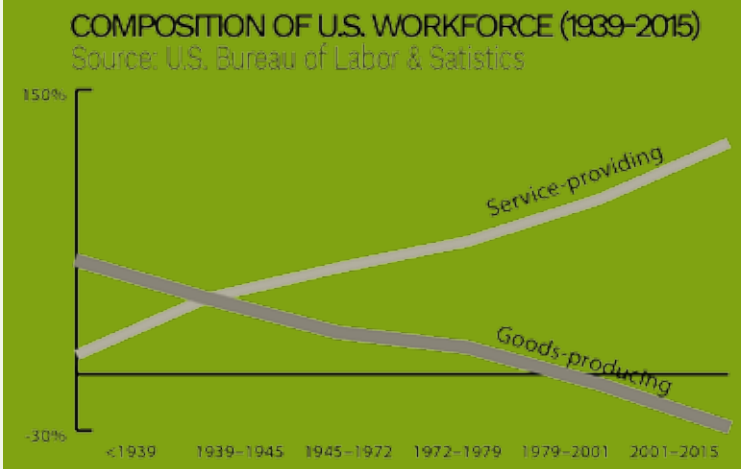

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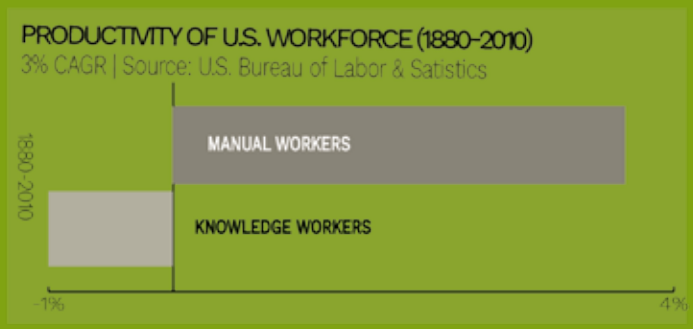


▲ *Figure 3.*

annual growth rate (CAGR) of 3.0% in the United States. To illustrate the productivity gains, the production of a single weaver increased by a factor of 50 during this period[4]. This story played out across the economy; the reduced costs for goods led to increased demand and thereby created more logistics and service-related jobs.

These gains were limited to manual work, which grew at a CAGR of more than 3.5%. In contrast, the productivity of knowledge work decreased during this period[5]. This discrepancy was due to fundamental differences in the nature of knowledge work. Unlike the progressive, tangible products of manual labour, knowledge work is non-linear, often intangible, and difficult to manage. However, when properly structured, significant value can be created by knowledge workers. *Figure 3*

The economic value of human capital

As organisations turn to automation to cut costs at every corner, it is easy to forget the economic capability of individuals in a workforce. However, the term 'human capital' itself signifies people's potential to create economic value. In the same way, an enterprise pays interest to borrow financial capital or makes lease payments for the use of physical capital, employers borrow productive capacity from their employees at the cost of a wage and ancillary benefits. When engaged in knowledge work, human capital has the potential to deliver outsized returns on the cost of capital.

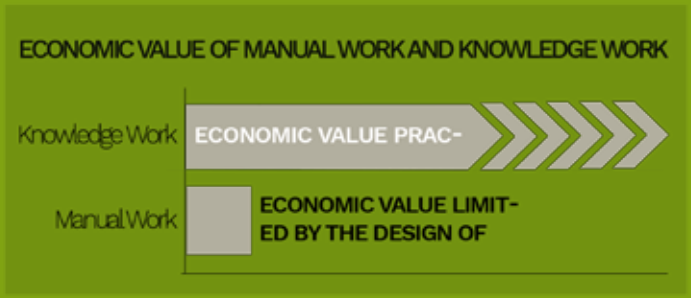
As Steven Wellman, the former chief of the US Securities and Exchange Commission, said in 1996: "Intangible assets, such as brand names, intellectual capital, patents, copyrights, human resources, etc are generating an ever-increasing amount of overall wealth"[6]. Intangible assets, and by extension human capital (the means of production for intellectual capital), feeds the majority of future cash flows for public companies today (McGuire & Brenner 2015)[7]. This limitless yet largely untapped resource, gives rise to the economic concept of human capital – its prodigious power to generate revenue.

This perspective had limited utility when referring to manual workers, because their potential to create economic value is designed into and restricted by the task performed. Manual workers complete physical tasks prescribed in advance, complying with standardised instructions and performing based on training, experience, and discipline. Manual workers can either realise this profit or, with underperformance, achieve even less. Any variation from the work design is considered waste. For this reason, it is rare for manual work ever to be valued above the cost of replacement with another worker or a machine to perform the same task. *Figure 4*

Knowledge workers are unconstrained resources

In contrast, knowledge workers capitalise on an opportunity by responding in unique ways to enable product and service differentiation, and have no such limit to their upside potential for value creation. Typically, these workers perform and self-manage based on talent, judgment, information and experience. The potential benefits are virtually unlimited, for example, to create new products, secure additional customers, or develop ancillary services, all of which have unconstrained economic value, depending on the knowledge workers' capabilities, support, and luck.

Unlike other resources, knowledge work is unconstrained by physical capacity and thus has far greater potential for productivity improvement. Managers establish real financial gain by tapping into productivity improvements in this predominant type of work. After all, leaders would surely address any other form of capital



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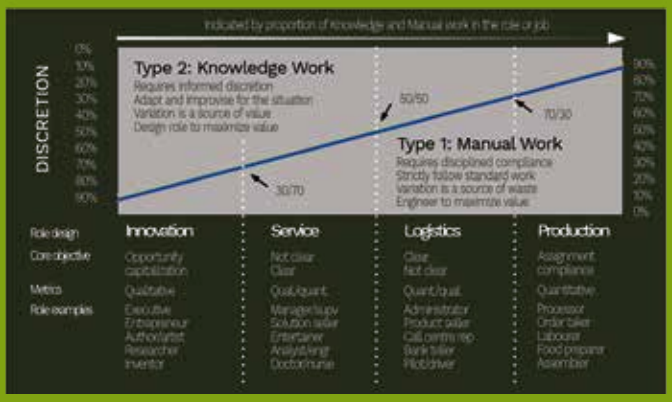


▲ *Figure 5.*

which decreased in productivity, yet most leaders opt to manage the symptoms of an inefficient workforce, rather than treat the systemic cause.

As with the utilisation of other forms of rented capital (for example, equipment, services, and real estate), companies with ideal work environments achieve higher yields on the human capital they employ. When appropriately supported, people unearth solutions to novel challenges, establish an intrinsic connection with a company's culture, commit to their employer's mission, empathise and create trust with customers, and even adapt easily to industry changes when machines cannot.

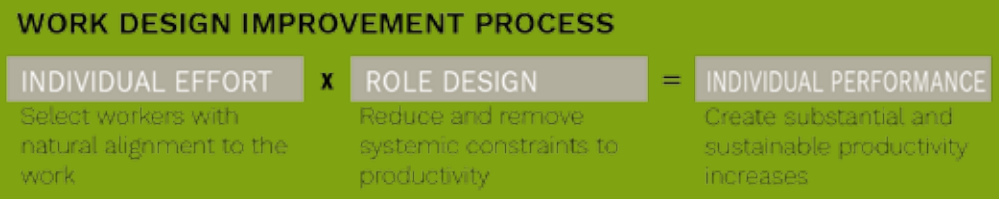
Managing human capital

The ideal management strategy engages a holistic approach to the organisation, by applying knowledge of human nature gleaned from organisational and behavioural science. It also incorporates tools developed by engineers and military scientists, to increase the performance and reliability of human endeavours. This collaborative, mixed methods approach has a greater probability of creating an outsized return on investment.

The bottom line remains whether your organisation can benefit from a reconceptualisation of organisational roles and at what cost. Your organisation is unique, and no doubt faces singular challenges.

As you read on, ask these questions to see if your organisation could benefit from this comprehensive approach. Do individuals in your organisation engage in problem-solving, imagination, empathy, or anticipatory activities? Do the applicable organisational systems promote higher performance in these areas? Would additional support or reduction of constraints enable your people to create more economic value?

▲ *Figure 6.*



▲ *Figure 7.*

In the likely event you responded affirmatively, consider how your organisation can incorporate work design protocol and thereby increase productivity. In doing so, it is helpful to look beyond your organisation's predominant type of work – manual work or knowledge work – because every role includes a combination of both.

Modern professionals sit along a continuum of discretion from positions requiring high degrees of creativity, innovation, and service, to logistics and production needs. Most workers move fluidly between these frameworks and participate in some form of knowledge-based activity on a regular basis. These examples indicate how knowledge work augments various roles:

- A production-line worker who makes a waste-reducing suggestion.
- A transport driver who overcomes new obstacles to deliver on time.
- A service provider who delights a prospective client and generates new business.
- A systems designer who proposes a better approach to management. *Figure 5*

Maximise knowledge worker response-ability

The dominant nature of the work (either knowledge or manual) should determine the fundamental design of each role, and further discretely incorporate principles and methods conceived to maximise productivity.

Knowledge work involves creating and applying knowledge to adaptively respond to value-creating opportunities wherein workers act as agents of the organisation rather than instruments. Consequently, their role design must accommodate this flexibility and reward employees for their contributions rather than their compliance.

The design of most knowledge worker roles is inadequate in differentiating from its counterpart, and receives only rudimentary attention sufficient to outline a job description or recruiting specification. Neither of these considerations optimises the underlying work system of the role for maximum knowledge worker response-ability. *Figure 6*

Make systemic design improvements

The design and management of a role create the principal barrier to more productive knowledge work. This impediment explains why popular productivity improvement programmes, which seek to energise underperforming workers with leadership, training, and incentives, produce limited or short-lived improvements.

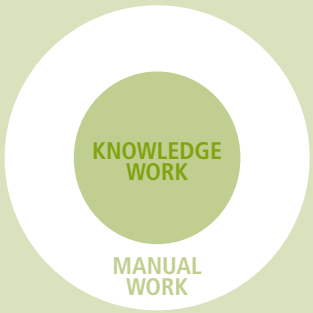
Programmes to motivate workers can be helpful, yet are rarely sufficient to break through the systemic constraints common to inadequately designed knowledge work. Directly improving the design and management of knowledge work roles can reduce or remove such barriers, resulting in substantial and sustainable productivity increases across all workers in the role. *Figure 7*

Breaking the cycle of underperformance with inspired employees

Under-designed knowledge worker roles predictably result in work-system dysfunctions that suppress performance. Such roles also extract a human toll of frustration and lost self-efficacy, triggering the Silver Rule of Reciprocity and sustaining a vicious

Four steps to high-yielding knowledge workers

The following steps provide a field-validated management process to augment the yield of human capital:



▲ *Figure 10 Precision Redesign: All work can benet Target the knowledge work in each role for its higher potential to create economic value.*

STEP 1 – Assess and redesign roles to maximise value creation

Close assessment often confirms that even highly specialised knowledge work is designed and managed using methods conceived for manual work, thus sharply reducing employee potential.

Companies should begin with the redesign of high-leverage roles, which for example are highly populated, include customer contact, and have profit responsibility. Next, parse the work content into manual work and knowledge work. Target the knowledge work, make it a priority, and assure this part of the role is designed and managed as knowledge work. Consider opportunities to replace manual work with knowledge work, thus enabling each role to create more economic value.

STEP 2 – Align workforce to maximise person-role fit

Knowledge work requires specific intrinsic motives and innate capabilities. Certain individuals are much better suited to a certain role due to a particular aptitude or character trait. For example, the shrewd analytical capabilities and foresight that characterise a successful investment banker or the creative aesthetic and design thinking that distinguish a software user experience designer.

Alignment of personal attributes to the role predictably results in elevated performance, full engagement and high satisfaction, whereas limited fit inhibits results. As a result, this person-role fit is an effective proxy for knowledge work performance and, inversely, performance is the best indicator of knowledge work fit.

Organisations often struggle with getting the right people in precisely the right roles, but there are strategies to determine such alignment and rewards for such efforts. Field research makes clear that for knowledge-based work, high fit to the role leads to full engagement and high satisfaction with one's work (A level). The same individual might experience just adequate alignment for other roles (B level) and poor performance for still others (C level).

Align personal attributes to role: Achieve optimal performance

ROLEFIT	Engagement	X	Satisfaction	=	Performance
A- Level	Full		High		Excellent
B- Level	Partial		Adequate		Mediocre
C- Level	None		Low		Unacceptable

▲ *Figure 11*

STEP 3 – Flex role to maximise individual person-role fit

Knowledge work performance evolves from a complex adaptive system of influencing factors and exhibits the system condition called equifinality, meaning different initial conditions readily lead to similar results. In other words, a variety of approaches can be utilised by knowledge workers to achieve the business objective. This relationship is unlike the linear cause and effect relationship between inputs and outputs routinely experienced with manual work, where, for example, one must have the exact parts to assemble the product. In practical terms, this suggests that managers of knowledge work should allow flexible means and methods to achieve desired results.

EQUIFINALITY: noun | equi- + nality

Dierent initial conditions lead to similar results.

▲ *Figure 12*

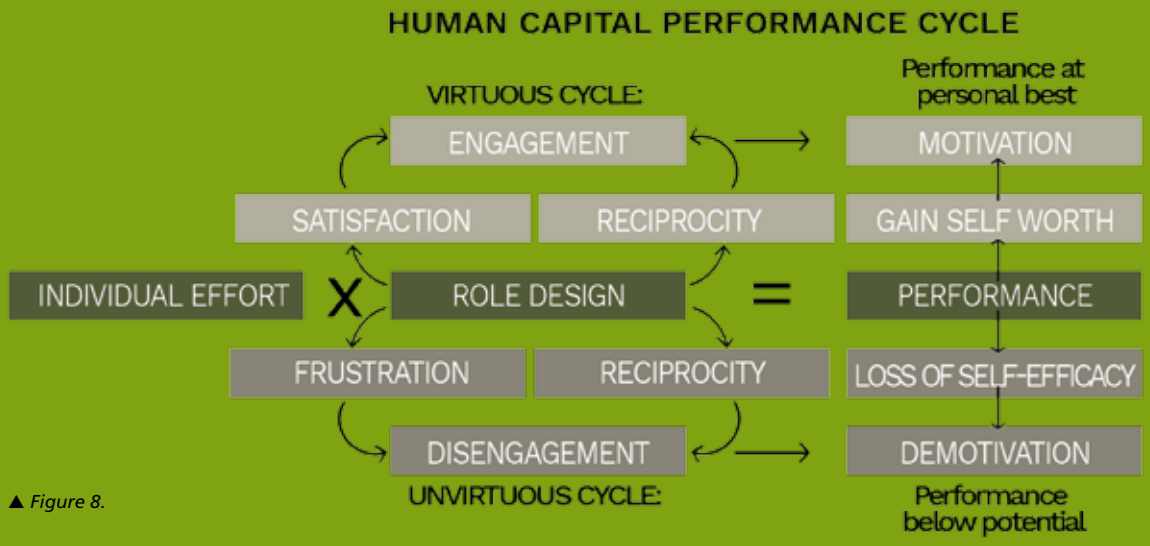
Step 4 – Develop individuals to maximise value creation

The objective for manual workers is to meet the proscribed performance target. Underperformers typically receive development support to make up for shortfalls, but outperformance is not a consideration. Knowledge workers, by contrast, seek to perform (as individuals and in teams) at their personal best to maximise the economic value created. Companies are, therefore, wise to provide knowledge workers with expert-level individual performance development support through education, coaching, counselling, and mentorship with the objective of continually raising their personal best performance.

TYPE 1: MANUAL WORKER	
Intelligence	• Uses common sense • Learns the work
Diligence	• Hard-working • Accountable • Conscientious
Obedience	• Diligent • Rule-following • Respects authority
Physiology	• Strength • Hand-eye coordination • Stamina

▲ *Figure 9*

TYPE 2: KNOWLEDGE WORKER	
Creativity	• Clever • Seeks improvements • Develops alternatives
Initiative-taking	• Not limited by job description • Acts proactively
Commitment	• Objectives have personal meaning • Accountable
Expertise	• Advanced knowledge • Relevant experience and acumen



▲ *Figure 8.*

cycle of negative pressure on attempts to increase productivity. *Figure 8*

Raising expectations, when supported with incentives and leadership, can temporarily re-energise knowledge workers for minor temporary gains. However, achieving major sustainable gains will require the same level of attention to knowledge worker role design that was given to business process design, yet the emphasis will now be on human systems and psychological flow, rather than information systems and physical flow.

Every knowledge work role is unique in its situation. Accordingly, highly populated roles on the company's front lines of revenue generation (for example, services, sales, and development) will likely deliver a strong return on investment through a pilot programme of improved designs with receptive groups. As the project expands throughout the organisation, experience reveals that some dysfunctions will be resolved quickly with minimal time and expense, yielding performance improvements in the 20-40% range and inspiring renewed and sustained effort by knowledge workers.

Knowledge work requires specialised workers

These returns are possible because knowledge work is more complex and largely unstructured, making performance a matter of risk-taking, judgment, and persistence. Intrinsic motives and innate capabilities are necessary for people to convert imprecise opportunities into economic value.

The alignment of their intrinsic motives and natural capabilities with their situational opportunities, largely determines the achievements of people performing knowledge work. If their role is properly aligned to organisational goals, knowledge workers should supply seemingly endless market opportunities and disruptive innovations from which to create economic value. *Figure 9*

Leading the charge to growth

In following these steps, managers can achieve their goal of delivering earnings growth. This process enhances capacity with an engaged and resilient workforce that will supply leadership and talent for the challenges to come, a key goal for business leaders. Furthermore, when implemented at scale, employees should experience unprecedented satisfaction and engagement with their work. The synergies here are key. Imagine, happy employees delighting customers and unleashing sustainable, forward-looking growth.

As during the golden age of growth, technology breakthroughs in artificial intelligence and robotics have created an environment where productivity gains should be evident across industries. Successful companies will be those that harmonise these scientific advances with a powerful human capital resource. This new age of growth has the potential to spur a new, more inclusive wave of economic prosperity – and your organisation can lead the charge.

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Katherine Bush develops systemic approaches to effectively manage large-scale people-dependent operations in concert with the Humaneering Technology Initiative. She seeks prosocial advances based in data and scientific analysis helping businesses and non-profits achieve their goals. Most recently, she implemented evidence-based interventions and organisational/behavioural strategies in field-based studies within the criminal justice system, on behalf of the Institute of Behavioral Research at TCU. Much of her career has been spent in finance, advising executives on a range of financial strategies, including mergers/acquisitions, capital markets, and operations on behalf of Berkshire Partners, a Boston-based private equity firm, and J P Morgan. Katherine received her BA from the University of Chicago and is a graduate candidate at the McDonough School of Business at Georgetown University and the ESADE School of Business at Ramon Llull University. She can be contacted at katherine.bush@innohcap.com (www.innohcap.com).

James Pepitone

Dr James (Jim) Pepitone specialises in improving the productivity of knowledge workers and has served clients across most industries and regions of the world. He was instrumental in founding the Humaneering Technology Initiative in 2002, served in numerous volunteer and operational roles since, and recently became the CEO to prepare the organisation for open release of DesignedWork, a protocol for the design and management of human work developed from the new applied science of humaneering. His career includes industry positions as VP of Sales for a division of Automation Industries (now Honeywell) and General Manager for Cybertek, both public companies, and continued as a management consultant. Jim's education includes a BBA in Industrial Management and MBA from the University of Texas at Austin, and an MS in Organisation Development and Ed D in Organisation Design from Pepperdine University in California. He can be contacted at james.pepitone@humaneeringtech.com.