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Leadership development techniques
Mapping leadership development techniques with leadership capacities using a typology of development

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Abstract
Purpose – The purpose of this paper is to identify the different leadership development techniques used to develop leaders from the human resource development (HRD) and performance improvement (PI) literature, and to categorize the development techniques using Garavan et al.'s (2015) multifaceted typology of development where development has recently emerged in the literature as a “central and important process” (p. 360).
Design/methodology/approach – This literature review followed the guidelines for an integrative literature review presented by Torraco (2005) and Imel (2011). This literature review was a freestanding literature review designed to provide directions for future research and development within the HRD discipline.
Findings – This literature review categorized over 500 leadership development techniques and mapped them with previously identified leadership capacities into Garavan et al.’s (2015) development typology. Once mapped, the authors were able to identify the most common leadership capacities and related development techniques for each development domain in the typology.
Practical implications – This research provides a tool for identifying required leadership capacities and development techniques that could be used by scholars and scholar-practitioners to conduct further research, as an aid in designing future leadership development programs and as instructional materials in the classroom.
Social implications – Leadership is becoming a shared construct in today’s literature. Leadership as a shared construct has multiple shareholders, both internal and external of the agent. To better meet the needs of these shareholders, this research provides tools for the scholar and scholar-practitioner for leadership development that can be catered to one’s needs as opposed to a one-size fits all strategy.
Originality/value – This paper highlights the HRD and PI literature, and provides a pragmatic tool for leadership development. This tool can be used by scholars for future research and for testing, as well as by scholar-practitioners for designing future leadership development programs.

Keywords Literature review, Typology, Leadership development, Leadership capacities, Leadership development spectrum, Leadership development techniques

Paper type Literature review

Leadership development continues to “evolve at an unforeseen pace” (Ardichvili et al., 2016, p. 275) within the human resource development (HRD) literature. For example, Callahan and Rosser (2007) highlighted leadership development as a critical activity for HRD professionals, whereas Blakeley and Higgs (2014) presented developing responsible leaders...
as one of HRD’s critical interventions. In addition, Thakadipuram (2010) identified leadership development as being a critical global competency for HRD. Global leadership development has been identified as “one of the fastest growing trends” (Ardichvili et al., 2016, p. 279) today with little attention to how these leaders are developed. Leadership development programs, at a minimum, need to address three leader capabilities: self-management, social and work facilitation (Muir, 2014). Yet there has been little research focused on tracking an individual leader through the process of development (Muir, 2014) and little research based on learning about the process of developing leaders (Day and O’Connor, as cited in Muir, 2014).

MacKenzie et al. (2014) identified that leadership, prior to the 2007 financial crisis, had focused on short-term gains with the mentality to “follow the crowd” (p. 37) without the ability, or willingness, to question strategy and organizational plans. McCarthy (2014) indicated that the role of leaders during the financial crisis was called into question, highlighting that leaders failed to live up to their responsibilities. MacKenzie et al. (2014) indicated that strategic human resource development (SHRD) partially contributed to the dysfunctional behaviors found in leaders during this crisis, ultimately failing in the role of leadership development. These dysfunctional behaviors led to a culture that viewed “reward/incentives” (MacKenzie et al., 2014, p. 45) as the only acceptable outcome. The question arises then: Were the failures in the leadership development efforts or the wrong leadership capacities being developed?

Leadership development programs have been portrayed as being too linear, placing the emphasis on leadership at the individual (leader) level rather than at the distributed relational interactions (Bolden and Gosling, 2006) among agents. In today’s age of globalization, information overload and complexity, leaders need to be able to operate in various types of environmental variation (Godfrey-Smith, 1998). Environmental variation suggests, according to Godfrey-Smith (1998), “that a rapid pace of environmental change makes individual adaptation necessary, while slower changes can be tracked” (p. 256). Leaders operating in today’s complex environment need to be exposed to leadership development programs that provide them with the tools and knowledge to adapt to environmental variation. Nesbit (2012) also identified this developmental deficit by stating that these linear development programs could “seriously impede HRD efforts” (p. 204), calling for developmental programs to better address today’s dynamic workplace. These calls are related to the private sectors; calls for a change in leadership and new forms of leadership development for the educational sector have also been made in the literature (McCauley-Smith et al., 2013). Current leadership development programs need to be realigned to better meet the needs of innovation, complex problems and dynamic work environments while providing a culture that questions strategy and plans to better meet the demands of operating in dynamic work environments. Leaders have a direct effect on an organization’s culture (MacKenzie et al., 2014) and must represent a culture that meets the demands of adaptation.

The primary purpose of the current paper is to identify the different leadership development techniques that could potentially be used to develop tomorrow’s leaders. This research contributes to the leadership development literature by categorizing a large number of development techniques in one location. This research also benefits leadership development efforts by providing a tool that can be used to identify which leadership capacities are desired and cross-referencing a selection of development techniques that could be used. Scholars and scholar-practitioners can benefit from this research by being able to better identify what development techniques to use based on their leadership development needs, as opposed to following traditional linear development programs. The flexibility that
this selection of leadership development techniques provides to scholars and scholar-
practitioners is one of its biggest benefits.

Methodology
This integrated literature review (Torraco, 2005, 2016) coded content relating specifically to
leadership development techniques as identified in the literature. The literature chosen for
this review was from the four Academy of Human Resource Development (AHRD)
publications (Advances in Developing Human Resources, ADHR; Human Resource
Development International, HRDI; Human Resource Development Quarterly, HRDQ; and
Human Resource Development Review, HRDR) and from Performance Improvement
Quarterly (PIQ). The literature was reviewed from 2000 to July 2015 using the search terms
“leadership AND theory,” “team AND leadership,” “leadership AND development” and
“team AND development”.

Using Garavan et al.’s (2015) development typology, the leadership development techniques
were synthesized into a developmental typology or framework (Imel, 2011; Torraco, 2005).
These leadership development techniques were matched to the respective typology matrix by
associating the leadership capacity with its respective typology domain, then by identifying the
appropriate leadership development techniques to accompany this typology domain. This
leadership development typology provides a tool for scholars and scholar-practitioners for
identifying appropriate leadership development techniques based on the organizations’ need as
identified in the leadership development typology.

Leadership development – it is collaborative
Callahan and Rosser (2007) made the distinction between leadership education and
leadership development. Leadership education relates to the “delivery of content about
leadership” (p. 269), whereas leadership development concentrates on “the process through
which leadership knowledge, skills, and abilities are created” (p. 269). Hanson (2013)
differentiated between leader development and leadership development stating that
leadership development cannot take place without leader development. Gagnon et al. (2012)
identified leadership development as being related to a process that affects the collective in a
non-linear manner. Leadership development at the collective level involves one’s capacity to
collaboratively work with others and focus on shared networks and meaning (Gagnon et al.,
2012).

Hanson (2013) identified that many leadership development interventions or training
programs are chosen using the cookbook approach, where one intervention is selected
followed by the next sequential intervention, and so on. Trehan (2007) highlighted the point
that research on leadership development has shown inconsistent and contradictory results,
partially due to leadership development efforts taking an individual focus (as in leader
development) rather than viewing leadership development as a social process. Leadership
development as an intervention has traditionally approached leadership development in a
linear manner, resulting in ineffective development for today’s complex and global economy.
New leadership development interventions need to be non-linear, an exercise in critical
thinking and problem-solving, aid one’s sense making capabilities that can be
communicated to the collective (shared meaning; Hanson, 2013), as well as extending roles
and responsibilities that are more distributed among followers. New leadership development
programs need to refocus efforts from developing skill sets to developing mindsets
(Kennedy et al., 2013). Mindset focused leadership development efforts are concerned with
three primary functions, personal, relational and contextual, ultimately requiring a “new
mindset, language, conceptual terrain, and relationally between participants, providers, and organizations“ (Kennedy et al., 2013, p. 12).

Hotho and Dowling (2010) highlighted the collaborative nature of leadership development in their research. They found that the participants of leadership development programs co-created their understanding of leadership, placing “leadership development as a collaborative process involving all stakeholders” (Hotho and Dowling, 2010, p. 625). Grandy and Holton (2013) supported the idea that leadership development should be viewed as a collective process rather than being viewed as an individualistic process. Leadership development, then, should be social, as well as “contextual, cultural, and dispersed” (Edwards and Turnbull, 2013a, p. 49).

Unfortunately, current leadership development practices have been institutionalized, focusing on the leader-in-training in dyadic relationships using pre-set pedagogy (Hotho and Dowling, 2010). Hotho and Dowling (2010) indicated that this continuing dyadic development trend exists even when current theories and leadership development models have moved to being more interactive, collaborative and problem-based learning environments. Recent research on creativity and innovation has identified that these processes are collaborative processes; “innovation is a process of collaboration and joint discovery” (Folkestad and Gonzalez, 2010, p. 118). By conducting a content analysis on literature (books and articles) related to innovation, Folkestad and Gonzalez (2010) identified the following themes:

- Innovative culture is essential, team design is essential for innovation, diversity is vital to innovative teamwork, environment (team workspace) has a significant impact on innovation, a rapid team-based experimentation process is required, calculated failure should be encouraged, and reward systems must align (p. 124, emphasis in original).

Folkestad and Gonzalez (2010) further identified that creativity needs to be fostered through organizations via restructuring of organizational ecosystems around teamwork for innovation, breaking the trend of implementing institutionalized pre-set pedagogy practices. Likewise, Mumford and Gibson (2011) highlighted that one way of improving creativity in organizations is to improve leadership, calling for further research to be conducted to develop new interventions for improving leadership capabilities and creative efforts. This places an additional need for redesigning existing team and leadership development programs to lead these new innovative ecosystems.

In sum, leadership development needs to be collaborative while incorporating both leadership education and development characteristics. These development programs need to be mindset focused, incorporating critical thinking, problem-solving and sense-making training. Also, the knowledge, skills and abilities gained from such leadership development interventions should allow participants to be able to practice their skills as a method of reinforcing their learning.

**It takes practice**

Most companies use formal education for leadership development, contrary to research indicating that leadership development training (focusing primarily on leadership theory), without some type of application or practice, is ineffective (Callahan and Rosser, 2007). This component of application is consistent with social learning theory where “situated cognition originates with engagement in the activity itself” (Torraco, 2002, p. 454), and with action learning where learning is gained from action (Skipton Leonard and Lang, 2010). Gilley et al. (2010) contended that team participation improves the leadership skills of individual team members. The act-of-doing is a critical component to learning leadership skills. Hanson (2013)
highlighted practice as being a critical component to successful leadership development efforts. This point is highlighted by Microsoft’s Leadership in Action Program, as outlined by Waddill et al. (2010). Microsoft’s Leadership in Action Program had been designed around four key drivers identified from research, with the fourth driver being: “a rich, challenging on-the-job experience” (Waddill et al., 2010, p. 270). This leadership development initiative emphasized solving actual problems (leadership by doing) by using action learning techniques, which allow leaders-in-training to practice their new leadership capacities (Waddill et al., 2010).

Leadership is viewed as a skill that can be learned over time with the right experiences. Keller (2007) highlighted leadership career experiences as helping leaders develop their skills and knowledge over time. Mumford et al. (2000) identified four specific career-related experiences to aid in developing leaders: “(1) job assignments that provide exposure to novel, challenging problems; (2) mentoring; (3) appropriate training; and (4) hands-on experience in solving related problems” (p. 24). Learning by doing (Skipton Leonard and Lang, 2010), has become “a familiar mantra in the training and development community” (p. 226).

Developing effective leaders in today’s environment is recognized as a high priority with developing effective leaders as one of the core functions of HRD (Weinberger, 2009). To better develop tomorrow’s leaders, leadership development interventions need to address real-world problems to reinforce learning.

The following section highlights the different leadership development techniques that were found in the literature. These development techniques are presented in the leadership development typology that was initially based on Garavan et al.’s (2015) developmental typology and cross-referenced with the leadership capacities identified by Turner and Baker (2018).

Leadership development techniques from the literature
The leadership development techniques that were identified from the current integrative literature review were combined into their respective development typology domain (Garavan et al., 2015). Each leadership development technique was then associated with the leadership capacities, presented by Turner and Baker (2018), and mapped into their respective development typology domains using Garavan et al.’s typology (Table I).

Development typologies
Garavan et al. (2015) defined development as “an unfolding process of growth that occurs in various ways along multiple trajectories at different levels of analysis, influenced by context and leading to a range of positive outcomes” (p. 364). This definition meets the needs of leadership addressing environmental variation in that it crosses multiple trajectories, as well as includes different levels of analysis (i.e. individual, team/group, organization and environmental). This definition also focuses on positive outcomes, which ultimately is the desired outcome for leaders regardless of whether the desired outcome is profit-driven, social or community-driven.

Garavan et al.’s (2015) multifaceted typology of development consists of two dimensions, structural and process. The structural dimension presents development as taking place within individuals or within interdependent units. Development at the individual level is considered structurally independent, whereas development involving collectives (e.g. teams, organizations and communities) is considered interdependent (Garavan et al., 2015). The process dimensions differentiate how development unfolds, either planned (e.g. rationalistic, goal focused and continuous) or emergent development (e.g. holistic, tentative and ambiguous; Garavan et al., 2015). Garavan et al.’s (2015) typology is represented by a two-by-two matrix with the structural dimensions along the vertical, independent (individual)
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Table I. Leadership development techniques and capacities by typology (continued)
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<th>Leadership development technique (current study)</th>
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<td>Change*</td>
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<td></td>
<td>Integrate new and existing knowledge</td>
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<td>Increase practice with increasing levels of complexity</td>
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<td>Test-based development assessment</td>
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<td></td>
<td>Conflict resolution</td>
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<td>Promote effective communication</td>
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<td>Provide ways to handle conflict</td>
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<td></td>
<td>Managing diversity</td>
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<td></td>
<td>Provide opportunity for people to work in different sectors and cultures</td>
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<td>Stakeholder collaboration</td>
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Table I. (continued)
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<thead>
<tr>
<th>Development typology (Garavan et al., 2015)</th>
<th>Leadership capacity (Turner and Baker, 2018)</th>
<th>Leadership development technique (current study)</th>
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<td>Group coaching projects</td>
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<td>Immersive single-problem action learning sessions</td>
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<td></td>
<td>Solve real problems</td>
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<td></td>
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<td>Group discussion and reflection</td>
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<td>Incorporating team building exercises and games</td>
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<td>Team building exercises and games</td>
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<td>360-degree EI inventory</td>
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<td>Coalition building</td>
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<td></td>
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<td>Formal and informal learning</td>
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<td>Knowledge acquisition techniques</td>
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<td>Leadership scenario enactment</td>
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<td></td>
<td></td>
<td>Questioning established patterns</td>
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<td>Simulation-based development</td>
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<tr>
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<td></td>
<td>Use of spaced practices</td>
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<td>Critical learning moments</td>
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<td>Listening/communication skills</td>
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<td>Encourage mental rehearsal</td>
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<td>Scenario planning</td>
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<td>Story choir</td>
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<td>Story teller and assistant</td>
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<td>Word at a time</td>
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Table I.
<table>
<thead>
<tr>
<th>Development typology</th>
<th>Leadership capacity</th>
<th>Leadership development technique (current study)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Garavan et al., 2015)</td>
<td>(Turner and Baker, 2018)</td>
<td></td>
</tr>
<tr>
<td>Management skills/functions</td>
<td>Application of proven techniques Building ethical business skills Building management-employee trust Coalition building Coaching and mentoring Conflict resolution Role modeling</td>
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</tr>
<tr>
<td>Moral/ethical*</td>
<td>Engagement Questioning established patterns</td>
<td></td>
</tr>
<tr>
<td>Performs effectively</td>
<td>Learning plans</td>
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<td>Political acumen</td>
<td>Coalition building Conflict resolution Developing practices attuned to a complex, indeterminate and relational world International affairs and codes of conduct</td>
<td></td>
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<td>Problem-solving skills</td>
<td>Facilitating problem-solving sessions Hands-on experience Problem solving Relational world Sensemaking actions Testing assumptions and thought processes</td>
<td></td>
</tr>
<tr>
<td>Reflective skills*</td>
<td>Group process skills Instructor-as-coach Peer-coaching Transparency Test-based development assessment</td>
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</tr>
<tr>
<td>Strategic thinking skills</td>
<td>Action-oriented activities Development assignments General management knowledge in strategy Integrate new and existing knowledge Simulation-based development</td>
<td></td>
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<tr>
<td>Trust/trustworthiness</td>
<td>Blindfold buddy walk Cultivate a climate of transparency Foster trust Management-employee trust Role playing Trust-building activities</td>
<td></td>
</tr>
<tr>
<td><em>Networked</em> Interdependent/Planned: organizational and interorganizational development</td>
<td>Culture/diversity/identity*</td>
<td></td>
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<tr>
<td></td>
<td>Align diversity and leadership with business goals Diverse groups Guide organizational diversity communications Gender equity analysis Identity development Leader identity development Mentor partnership–leader identity discover Managing diversity</td>
<td></td>
</tr>
<tr>
<td>Global orientation</td>
<td>Developing practices attuned to a complex, indeterminate and relational world Forging a partnership International affairs and codes of conduct Scenario planning</td>
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</tbody>
</table>

Table I. (continued)
and interdependent, and with the process dimensions along the horizontal, emergent and planned. For the independent-emergent cell, the dimension of autonomous is presented; for the interdependent-emergent cell, the dimension of dialogic is presented; for the independent-planned cell, the dimension of acquisitive is identified; and for the cell interdependent-planned, the dimension networked is introduced (Garavan et al., 2015).

Going clockwise (autonomous, dialogic, networked and acquisitive) around the two-by-two matrix, the first cell autonomous represents development centered on the individual and is considered unplanned. This development dimension focuses on “personal growth or becoming a certain kind of individual” (Garavan et al., 2015, p. 368). The second cell, dialogic, identifies development that is emerging and unplanned, represented by “co-participation, mutual constitution, and sensemaking” (Garavan et al., 2015, p. 369). The third cell, networked, focuses on developing teams or organizations as a whole, is planned and composed of “purposeful actions, discovered consequences, implications, reassessments and further action” (Garavan et al., 2015, p. 371). Finally, acquisitive represents planned individual development, represented best by:

[...] developing new knowledge, skill, and behaviors that contribute to personal, professional job, or organizational resources [...] professional development [...] and organizationally focused development (Garavan et al., 2015, p. 366).

Mapping development techniques, capacities and typologies
Leadership capacities, consisting of “the skills, behaviors and traits of leaders and the relations and social dynamics depicted within leadership roles” (Turner and Baker, 2018,
Leadership Capacities) were categorized into 31 sub-categories. These leadership capacity subcategories are provided in Table I under the column heading Leadership capacity. Each leadership capacity was placed into the appropriate development typology from Garavan et al.’s typology. The typology and descriptions are provided in Table I under the column heading Development typology. The authors identified which capacity belongs to what typology and positioned the appropriate capacity under the heading in Table I. In some cases, there were specific leadership capacities that could be present in more than one typology domain. For example, Reflective skills could be developed in both the autonomous (individual, personal growth) and dialogic (collective and co-constructed) domains. Any capacities that were listed more than once have been highlighted with an asterisk in Table I.

From the same body of literature that the leadership capacities were captured, the authors identified the different leadership development techniques present in the literature. There were well over 500 leadership development techniques identified in the literature, including some that were identified more than once. The leadership development techniques were then associated with their respective leadership capacity and are listed in Table I under the column heading Leadership development technique. There are some instances in which the leadership capacity is listed more than once; in these cases, the leadership development technique was referenced based on the typology domain. For example, Teamwork/team building was listed for both the Dialogic domain (collective and co-constructed) and for the Networked domain (organizational and interorganizational). However, the leadership development techniques for each domain listed under their respective leadership capacity were slightly different due to the contextual differences in each domain.

The leadership development techniques included in Table I were selected by the researchers to provide a preview of relevant development techniques available for each domain within the typology. The section that follows provides further development techniques and sources that were specifically relevant to each domain within the typology. Not all of the development techniques could be listed in this article because of space considerations; however, the researchers felt that the more relevant techniques have been portrayed.

**Autonomous**

The development techniques identified in the autonomous matrix are those related to individual and personal growth development that is unplanned (emergent). The autonomous development techniques included those identified to aid in developing the following skills: competencies, change, development, individual personality traits or characteristics and reflective. Competencies development techniques include engaging the learner in the process, real-world practice (Skipton Leonard and Lang, 2010), learn how to learn (Waddill et al., 2010), sensemaking actions (Ligon et al., 2011). Change involved challenging experiences, opportunities to self-identify outcomes (Watkins et al., 2011), encourage mental rehearsal, increase proficiency and mastery (Skipton Leonard and Lang, 2010) and questioning established patterns (Kennedy et al., 2013).

Developmental skills techniques included communication skills (Waddill et al., 2010), questioning established patterns, testing assumptions and thought processes (Kennedy et al., 2013), enhancing self-development skills (Nesbit, 2012), growing skills, shaping the environment (Djibo et al., 2010) and self-reflection skills (Drodge and Murphy, 2002; Waddill et al., 2010). Individual personality traits or characteristics could be developed through gender equity analysis (White, 2012), leader-identity development (Muir, 2014), self-motivation, self-regulation, self-awareness (Espedal, 2004) and skill-based approach to leadership (Williams and Foti, 2011). Reflective skills could be developed using collective
reflection (Watkins et al., 2011), critical reflection (Johnson, 2008; Muyia and Kacirek, 2009) and reflection (Muyia and Kacirek, 2009).

**Dialogic**

The dialogic development techniques included those related to developing the following skills: coaching/mentoring, change, conflict, culture/diversity/identity, customer service oriented, moral/ethical, organizational learning and learning organization, reflective, social and teamwork/team building. Some of the development techniques associated with coaching/mentoring included: action learning techniques (Hanson, 2013), utilization of action-oriented activities (Watkins et al., 2011), building coaching and mentoring partnerships (Egan, 2013; Goldman et al., 2013; Muir, 2014), internalized thinking (Hanson, 2013), interpersonal skill development (Watkins et al., 2011) and utilization of scenario-based interventions (McWhorter et al., 2008). Change can be developed through the following techniques: action-oriented activities (Watkins et al., 2011), integrate new and existing knowledge (Skipton Leonard and Lang, 2010), questioning established patterns, testing assumptions and thought processes (Kennedy et al., 2013) and responsive to change (Gravells, 2006). Development techniques relating to conflict resolution techniques included mediated conflict (Warzynski, 2005), negotiation and conflict management (White, 2012), promote effective communication, provide ways to handle conflict (Gilley et al., 2010), resolving conflicts (Carden and Callahan, 2007), scenario planning, coalition building and conflict resolution (Anderson, 2013). Development techniques for culture/diversity/identity could include diversity training, managing diversity and providing opportunities for people to work in different sectors and cultures (Andreadis, 2002); cross-cultural issues (Ma Rhea, 2013); guided organizational diversity communications (Kormanik and Chyle Rajan, 2010); and creating a diverse network (Waddill et al., 2010).

Customer service oriented could be developed through immersive single-problem action learning session, learn to ask questions, on-the-job experience, one-on-one reflection meeting (Waddill et al., 2010), feedback and real-world practice (Skipton Leonard and Lang, 2010). Moral/ethical development techniques included ethical and moral reasoning, international affairs and codes of conduct (Andreadis, 2002), engagement (Blakeley and Higgs, 2014) and questioning established patterns (Kennedy et al., 2013). Organizational learning and learning organization development techniques included continuously build a learning culture, focus on organizational and workplace learning (Watkins et al., 2011), multisource feedback and 360-degree feedback (Geroy et al., 2005; Nesbit, 2012; Skipton Leonard and Lang, 2010) and organization learning and shared leadership (Clarke, 2013). Reflective skills were developed through group process skills (Skipton Leonard and Lang, 2010; Waddill et al., 2010; Watkins et al., 2011), peer-coaching, instructor-as-coach (Waddill et al., 2010), transparency (Watkins et al., 2011) and test-based development assessment (Skipton Leonard and Lang, 2010).

Social skills included action-oriented activities, feedback network of peers (Watkins et al., 2011), believed perceptions of others, self-perception (Stead, 2014), e-mentoring, multisource feedback (Antes and Schuelke, 2011), improvisation games, story choir, storytelling (Gagnon et al., 2012) and methods of social innovation (Andreadis, 2002). Teamwork/team building includes established team norms, team-based development assessment, team charter (Skipton Leonard and Lang, 2010), stakeholder collaboration (Andreadis, 2002), teamwork training (Watkins et al., 2011), team-building exercise and games (Keller, 2007), team unity and team building (Gilley et al., 2010) and teamwork training (Watkins et al., 2011).
Acquisitive

Within the acquisitive typology, development techniques involved those that are planned and developed individual skills relating to professional and organizational goals. The identified development techniques for the acquisitive domain included developing the following skills: change, conflict, community focused, critical thinking, competencies, decision-making, developmental, emotional intelligence, entrepreneurial, innovative/creative, leadership qualities, listening/communication, management functions, moral/ethical, performing effectively, political acumen, problem-solving, reflective and strategic thinking, as well as building trustworthiness.

Development of change skills/interventions could be conducted through the following techniques: action learning, integrate new and existing knowledge, increase practice with increasing levels of complexity, test-based development assessment, simulation-based development (Skipton Leonard and Lang, 2010), developing practices attuned to a complex, indeterminate and relational world and questioning established patterns (Kennedy et al., 2013). Techniques relating to conflict and conflict resolution included coalition building and conflict resolution (Andreadis, 2002), development of awareness, promotion of effective communication, provide ways to handle conflict (Gilley et al., 2010), recognition of personal and professional identities and conflict resolution (Carden and Callahan, 2007). The development techniques from the literature relating to community-focused capacities were ethical and moral reasoning, managing diversity and providing opportunity for people to work in different sectors and cultures, to stakeholder collaboration (Andreadis, 2002).

Critical thinking development techniques included action or experienced-based learning, applying systems thinking (Muyia and Kacirek, 2009), experiential learning (Ligon et al., 2011; Skipton Leonard and Lang, 2010; Watkins et al., 2011), modeling (Saban et al., 2000), scenario planning (Andreadis, 2002), simulations (Antes and Schuelke, 2011), skills-based approach (Williams and Foti, 2011), stage-like progression of development (Ligon et al., 2011) and transformative learning (Johnson, 2008). Competencies that are individual and professional or organizational focused could be developed using the following techniques: coaching/mentoring, critical reflection (internal and external; Nesbit, 2012), develop managerial roles, developing networked relationships and networking (Espeal, 2004).

Decision-making techniques included: action learning circles, group coaching projects, immersive single-problem action learning sessions, solve real problems (Waddill et al., 2010), group discussion and reflection (Keller, 2007), incorporating team building exercises and games (Keller, 2007) and sensemaking actions (Ligon et al., 2011). Developmental skills could be enhanced using the following techniques: coaching skills (Drodge and Murphy, 2002; Waddill et al., 2010), communication skills (Waddill et al., 2010), group processes (Shelton et al., 2010; Waddill et al., 2010) and self-reflection skills (Drodge and Murphy, 2002; Waddill et al., 2010) through peer-coaching learning circles Waddill et al., 2010).

Emotional intelligence development techniques included coaching/mentoring skills, self-reflection skills (Drodge and Murphy, 2002), discussion/reflection (Geroy et al., 2005; Keller, 2007; Muyia and Kacirek, 2009), experiential activities, mentoring, team-building exercises and games (Keller, 2007), EI training, 360-degree EI competency inventory (EIC; Muyia and Kacirek, 2009), 360-degree feedback (Geroy et al., 2005), mentor partnership, mentoring leader identity development (Muir, 2014) and reciprocal peer coaching (Goldman et al., 2013). Entrepreneurial skill techniques involved coalition building, conflict resolution, scenario planning (Andreadis, 2002) and case enactment (Bagheri and Pihie, 2011). Innovative and creative techniques identified were knowledge acquisition techniques, formal and informal learning (Watkins et al., 2011), leadership scenario enactment (Bagheri and Pihie, 2011), questioning established patterns (Kennedy et al., 2013), use of spaced practice and
simulation-based development (Skipton Leonard and Lang, 2010). Leadership qualities were developed through the following techniques: critical learning moments (Muir, 2014), peer-coaching learning circles (Waddill et al., 2010) and team building (Germain and McGuire, 2014; Gilley et al., 2010; Keller, 2007; Skipton Leonard and Lang, 2010). Listening and communication development techniques included encouraging mental rehearsal (Skipton Leonard and Lang, 2010), communicating (Ridgway, 2001), scenario planning (Andreadis, 2002), story choir, story teller and assistant and word at a time (Gagnon et al., 2012).

Managerial skills and functions included application of proven techniques (Espedal, 2004), building ethical business skills (Muyia and Kacirek, 2009), building management–employee trust (Gilley et al., 2010), coalition building and conflict resolution (Andreadis, 2002), coaching and mentoring skill development (Drodge and Murphy, 2002) and role modeling (Ligon et al., 2011). Moral and ethical development techniques included engagement (Blakeley and Higgs, 2014) and questioning established patterns (Kennedy et al., 2013). Performs effectively was developed through learning plans (Andreadis, 2002). Political acumen was developed using coalition building and conflict resolution, international affairs and codes of conduct (Andreadis, 2002) and developing practices attuned to a complex, indeterminate and relational world (Kennedy et al., 2013).

Developing strategic thinking skills included the following techniques: action-oriented activities, general management knowledge in strategy (Watkins et al., 2011), development assignments, integrate new and existing knowledge and simulation-based development (Skipton Leonard and Lang, 2010). Finally, trustworthiness development techniques included blindfold buddy walk, role playing (Keller, 2007), foster trust, cultivate a climate of transparency (Germain and McGuire, 2014), management–employee trust (Gilley et al., 2010) and trust-building activities (Shelton et al., 2010).

Networked

The networked domain relates to organizational and interorganizational development and involves development of culture/diversity/identity, global orientation, networking and team or team-building skills. Within this domain culture/diversity/identity could be developed using the following development techniques: align diversity and leadership with business goals, guide organizational diversity communications (Kormanik and Chyle Rajan, 2010), gender equity analysis, diverse groups (White, 2012), identity development (Ligon et al., 2011), mentor partnership–leader identity discover, leader identity development (Muir, 2014) and managing diversity (Andreadis, 2002). Global orientation could be developed through international affairs and codes of conduct, scenario planning, stakeholder collaboration (Andreadis, 2002), developing practices attuned to a complex, indeterminate and relational world (Kennedy et al., 2013), forging a partnership and shaping the environment (Drodge and Murphy, 2002).

Networking techniques include diverse network (Waddill et al., 2010), feedback network of peers (Watkins et al., 2011), forging a partnership (Drodge and Murphy, 2002), network conditions (Clarke, 2013), networking (Espedal, 2004) and stakeholder collaboration and
coalition building (Andreadis, 2002). Teamwork or team-building skills could be developed with the following: develop an understanding of the role and value of team leadership, develop belief in the power of teamwork, increase interest and commitment to teamwork, team building, team unity (Gilley et al., 2010), develop group process skills, group coaching projects, high-potential teams (Waddill et al., 2010), establish team norms, team charters (Skipton Leonard and Lang, 2010), supportive of the team (Germain and McGuire, 2014), team-building exercise and games (Keller, 2007) and teamwork training (Watkins et al., 2011).

Discussion
Leadership development is a collective, social process (Edwards and Turnbull, 2013a, 2013b; Folkestad and Gonzalez, 2010) that is most successful when it is performed in situ addressing real-world problems while addressing all of the complexity’s experienced by today’s leaders. Leadership development is no longer an activity that can focus primarily on one individual as it must account for social interactions that take place in a dynamic environment. Also, one must consider for new organizational structures and ecosystems (e.g. teams, globally focused; Folkestad and Gonzalez, 2010). These efforts must be non-linear and provide sensemaking capabilities to better address today’s complexity (Hanson, 2013) with more distributed leadership methods in mind. Leadership development is contextual (Kennedy et al., 2013) and development designs should account for contextual issues with all stakeholders in mind (Hotho and Dowling, 2010).

In viewing the information provided in Table I, there were many duplicate leadership capacities highlighted. These duplicate capacities included competencies, change, developmental skills, reflective skills, conflict, culture/diversity/identity, moral/ethical and teamwork/team building (Table I). Duplicate capacities for both independent/individual domains (autonomous and acquisitive) included change, competencies, development skills and reflective skills; for both interdependent/collective domains (dialogic and networked) included culture/diversity/identity; and for both emergent domains (autonomous and dialogic) included change and reflective skills; with no duplicates between the two planned domains (acquisitive and networked).

These duplicates, by domains, are provided in Table II. They offer leadership development scholars and scholar-practitioners with the capacities that could give the most

<table>
<thead>
<tr>
<th>Autonomous (independent/emergent – individual)</th>
<th>Dialogic (interdependent/emergent – social)</th>
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</thead>
<tbody>
<tr>
<td>Change&lt;sup&gt;a,b&lt;/sup&gt;</td>
<td>Change&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
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<td>Competencies&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Conflict</td>
</tr>
<tr>
<td>Development skills&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Culture/diversity/identity&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Reflective skills&lt;sup&gt;a,b&lt;/sup&gt;</td>
<td>Moral/ethical</td>
</tr>
<tr>
<td></td>
<td>Reflective skills&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Teamwork/team building</td>
</tr>
<tr>
<td>Acquisitive (independent/planned – individual)</td>
<td>Networked (interdependent/planned – org/interorg)</td>
</tr>
<tr>
<td>Change&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Culture/diversity/identity&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Conflict</td>
<td></td>
</tr>
<tr>
<td>Competencies&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Developmental skills&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>Moral/ethical</td>
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<tr>
<td>Reflective skills&lt;sup&gt;a&lt;/sup&gt;</td>
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</tbody>
</table>

**Table II.**

Duplicated leadership capacities by independent, interdependent and emergent domains

| Notes: | a = Independent duplications; b = interdependent duplications; c = emergent duplications; modified from Garavan et al. (2015) |
benefit when designing a leadership development program according to independent or interdependent capacities. For example, when planning to develop leaders in either the autonomous or acquisitive domains (independent), the most common leadership capacities for development are change, competencies, developmental skills and reflective skills. To develop these capacities, one could consider the leadership development techniques listed in Table I for each of these leadership capacities. Likewise, for maximum benefit when looking at developing leaders for either the dialogic or networked domains (interdependent), the most common leadership capacities to be developed relates specifically to culture/diversity/identity. The development techniques recommended for culture/diversity/identity can be found in Table I per each domain. Last, if one wanted to design a leadership development program for the autonomous or dialogic domains (emergent), the most common leadership capacities are change and reflective skills; the appropriate development techniques can be found in Table I. There were no common capacities for the planned domains, possibly due to the lack of literature relating to the networked domain as highlighted by Garavan et al. (2015). However, the level of analysis from individual to organizational/interorganizational is too big to compare, making the leadership capacity and development requirements vastly different for these two domains.

While the data presented in the current article are current, it still has its limitations in that it only represents a small quantity of the literature in the vast field of leadership and leadership development. The coverage for the current study included the HRD and performance improvement fields of study. While the 15-year coverage is sufficient for a research study, it still comes with some limitations, especially for researchers and students who reside in disciplines outside of these fields of study. Future research studies are recommended to continue this line of research by collecting leadership capacities and development techniques from other bodies of literature. A more comprehensive developmental typology will then become available after a few studies have contributed to this research.

The leadership capacities and development techniques presented in the current study, although from refereed journals, were collected from a variety of different types of articles. These articles included conceptual, literature reviews, theoretical and quantitative and qualitative empirical studies. The information provided does not report which development techniques had been shown to be more effective compared to other methods due to empirical testing. Future research is recommended to conduct meta-analysis studies that identify which development techniques are most useful for each of the presented domains in the typology. Future research studies could also conduct experimental studies looking at the different development techniques within a specific domain from the typology.

Conclusion
The current article identified different leadership development techniques from the disciplines of HRD and PI. This research incorporated great depth over a 15-year period including 155 journal articles that identified over 550 leadership development techniques. By using Garavan et al.’s (2015) development typology, the authors were able to map leadership capacities from Turner and Baker (2018) with specific leadership development techniques from the current study. In summary, researchers, scholars and scholar-practitioners can use this comprehensive leadership typology to conduct future research, as an aid in designing future leadership development programs, and as instructional materials in the classroom.
References


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The role of strategic leadership for learning on the relationship between training opportunities and salesperson job performance and commitment

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Abstract

Purpose – The purpose of this study was to examine the indirect effects of strategic leadership for learning between sales employees’ perceived learning opportunities and organizational commitment and job performance.

Design/methodology/approach – A total of 204 responses from sales employees in a South Korean company were analyzed using path analysis to test the hypothesized model and hypotheses.

Findings – Results of the analysis showed that strategic leadership has a significant indirect effect on the relationship between perceived learning opportunities and job performance and organizational commitment. The results indicate that the relationship between continuous learning opportunities and performance, as well as between opportunities and organizational commitment, is statistically nonsignificant. However, the authors did find that providing continuous learning opportunities via strategic leadership because learning increases performance and organizational commitment.

Originality/value – The results of this study challenge the belief that providing learning opportunities improves salesperson performance and organizational commitment. The results indicate that the relationship between continuous learning opportunities and performance, as well as between opportunities and organizational commitment, is statistically nonsignificant. However, the authors did find that providing continuous learning opportunities via strategic leadership because learning increases performance and organizational commitment.

Keywords Organizational commitment, Job performance, Path analysis, Salespeople, Perceived learning opportunities, Strategic leadership for learning

Paper type Research paper

Improving performance and increasing commitment to organizations have long been an interest for human resource development (HRD) researchers and professionals. This is because organizations need committed employees and their continuous performance for sustainable development in competitive business environments. Swanson and Holton (2001) argued that performance is one of the ultimate goals of the HRD field, and many other researchers found that commitment is significantly related to desirable workplace outcomes such as job satisfaction (Carmeli and Freund, 2003), low-turnover (Aydogdu and Asikgil, 2011; Lum et al., 1998) and performance (Mowday et al., 1979; Williams and Anderson, 1991).

Recently, advanced technology, accelerated globalization and rapid market changes have affected employees’ performance and organizational commitment. Skills and knowledge that are necessary for employees to perform their work quickly become outdated and volatile business environments no longer guarantee life-long employment. To this end, organizations have placed greater emphasis on employee learning because learning enhances organizations’ competitiveness and flexibility by developing employees’ capabilities (Asfaw et al., 2015; Dixon, 1992; Jehanzeb and Bashir, 2013; Kontoghiorghes et al., 2005; Marsick, 2013; Watkins and Dirani, 2013; Wetherington and Daniels, 2013).
and increases organizational commitment (Ahmad and Bakar, 2003; Al-Emadi and Marquardt, 2007; Bartlett, 2001; Bulut and Culha, 2010; Ehrhardt et al., 2011).

Believing that learning creates positive outcomes, organizations provide continuous informal and formal learning opportunities for their employees (ATD, 2016). When providing learning opportunities, organizations encourage participation by supporting and rewarding the learning. Even though organizations expend significant resources on learning and employees perceive that their organizations continuously provide enough learning opportunities for their development, if the nature of the learning does not match the goals of the given organization, the learning will fail to produce the organization’s desired outcomes.

In this respect, aligning learning and organizational goals is critical for organizations to promote performance (Garavan, 1991; McCracken and Wallace, 2000; Tseng and McLean, 2008). Many researchers in the HRD field argue that this alignment is an important responsibility of leaders (Alagaraja, 2013; Marsick and Watkins, 2003). Leaders are expected to take an active role in suggesting a clear direction of learning (Noe, 2008), motivating employees’ learning and encouraging them to share the learning experiences (Vera and Crossan, 2004). Therefore, strategic leadership for learning – the extent which a leader strategically plans how to use learning to facilitate changes and development – is essential to explain the relationship between continuous learning opportunities and performance and organizational commitment. Despite an abundance of theoretical evidence suggesting the importance of a leader in ensuring this alignment, there have been few empirical studies on this topic (Vera and Crossan, 2004). Our goal in this study is to illustrate the impact of strategic leadership for learning on the relationship between continuous learning opportunities and salesperson performance and organizational commitment.

This study focuses specifically on salespeople, because in today’s highly competitive markets, salespeople play a critical role in the success of businesses. Salespeople generate economic gains for organizations by selling products and services and building relationships with customers (Ahearne et al., 2007; Blocker et al., 2012). In the USA alone, there are roughly 20 million salespeople, so their job performance is very important to their organizations (Fu, 2015). For organizations that depend on personal selling, cultivating and retaining high-performing salespeople who are committed to the organization is critical for success (Lu et al., 2015). Salespeople affect customer satisfaction and loyalty, and as a result, their performances can have short- and long-term benefits for an organization. Therefore, it is no surprise that organizations are spending $15bn a year on sales training for performance improvement (Fu, 2015). Despite their importance, salespeople have received less attention than other professionals from workplace learning researchers. While it is widely known that sales managers influence their salespeople to become successful at selling, it is those sales managers who understand the effects of strategic leadership on performance and organizational commitment are better equipped to both develop and retain successful salespeople (Paparoidamis, 2005). Therefore, it is important to investigate this relationship in a sales context with sales employees.

To examine the role of strategic leadership on the relationship between learning opportunities and salesperson performance and organizational commitment, the following research questions are proposed:

RQ1. What are the different relationships among learning opportunities, strategic leadership and salesperson performance and organizational commitment?

RQ2. Do learning opportunities contribute to salesperson performance and organizational commitment via strategic leadership?
Conceptual framework and hypotheses

This framework for this study reflects strategic HRD (SHRD; Garavan, 1991; McCracken and Wallace, 2000) research and Watkins and Marsick’s (1993) learning organization theory. SHRD is a “coherent, vertically aligned and horizontally integrated set of learning and development activities which contribute to the achievement of strategic goals” (Garavan, 2007, p. 25). Garavan argued that HRD efforts should be aligned with organizational goals and objectives so that the combined efforts can generate improved performances. He maintained that both top management support and line manager involvement in developing employees are critical factors for achieving this alignment.

The concept of a learning organization has been defined by a number of researchers, but Marsick and Watkins’ learning organization theory is regarded as the most integrated perspective, combining system thinking, learning and strategic perspectives (Yang et al., 2004). According to Marsick and Watkins (2003), a learning organization is characterized by continuous learning for improvement, with learning occurring at the individual and organizational levels. The researchers argued that the fundamental attribute of a learning organization is individual learning, but the learning should be determined and perfected according to the organization's mission or goals. Yang et al. (2004) found that individual-level learning has an indirect effect on organizational outcomes (e.g. knowledge and financial performance) via organizational-level variables such as system connections, embedded systems and strategic leadership.

Based on these theories and a literature review of studies of SHRD and the learning organization, we specify the following hypothesized model. In the next section, the research hypotheses based on this model, along with the theoretical and empirical justifications for the various pathways, are presented (Figure 1).

Continuous learning opportunities and performance

Researchers in the learning organization field have found that learning organizations generate high levels of organizational performance. For instance, Ellinger, Ellinger, Yang, and Howton (2002) determined that providing continuous learning opportunities for employees is positively related to companies’ financial performance objectives such as ROE, ROA, Tobin’s q and MVA. Later, Davis and Daley (2008) confirmed Ellinger et al.’s (2002) findings. Calantone et al. (2002) found that organizations’ learning commitments affect the organizations’ innovation capabilities and eventually enhance their performances. Research on salesperson performance has suggested that more knowledgeable salespeople can better classify customers according to factors such as business problems and solution requirements and can adapt their selling style accordingly and thus are more well-equipped for successful sales calls (Leigh et al., 2014). Therefore, knowledge greatly enhances the outcomes of sales personnel. Given that organizational performance is the summative performance of individual performance, it seems likely that
providing continuous learning opportunities for employees would increase performance, both individual and organizational. Based on this justification, we propose the following hypothesis:

**H1.** Continuous learning opportunities are positively related to performance.

**Continuous learning opportunities and organizational commitment**

Learning organization and workplace learning-related research has provided ample empirical evidence that providing a continuous learning environment increases organizational commitment (Ahmad and Bakar, 2003; Ashar *et al.*, 2013; Bulut and Culha, 2010; Islam *et al.*, 2013; Joo, 2010; Owoyemi *et al.*, 2011; Rose *et al.*, 2009; Song *et al.*, 2009) and decreases turnover intentions (Egan *et al.*, 2004). This positive relationship between continuous learning opportunities and organizational commitment supports social exchange theory. According to social exchange theory, the individual and the organization are in a reciprocal interdependent relationship (Thibaut and Kelly, 1959). In this interdependent relationship, one party’s action leads to a reaction from the other party (Cropanzano and Mitchell, 2005). When organizations provide their employees with learning opportunities, the employees typically consider the opportunities as a benefit and respond with commitment to the organizations. Based on this evidence, the following hypothesis is proposed:

**H2.** Continuous learning opportunities are positively related to organizational commitment.

**Continuous learning opportunities and strategic leadership for learning**

The direct path from continuous learning opportunities to strategic leadership for learning is based on learning organization theory. Watkins and Marsick (1993) argued that a learning organization consists of individual, group and organizational learning, which can subsequently be classified into two levels: people and structural. The people level refers to people in organizations, and the structural level represents organizational cultures or structures. According to Watkins and Marsick’s learning organization model, continuous learning opportunities and strategic leadership for learning belong to the individual and the organizational levels, respectively. Yang (2003) and Yang *et al.* (2004) tested this model and found that the structural level mediates the people level and organizational performance. In this regard, the following hypothesis is proposed:

**H3.** Continuous learning opportunities are positively related to strategic leadership for learning.

**Strategic leadership for learning and performance**

As previously mentioned, strategic leadership for learning is significant for organizations. How leaders facilitate learning in the workplace and align employees’ learning experiences with organizational values, goals and needs affects employees’ performances. Bontis, Crossan, and Hulland (2002) found that individual-, team- and organizational-level learning is positively related to business performance. However, if employee learning is not aligned with organizational goals, this misalignment negatively affects business performance. Studies on salesperson performance have demonstrated that learning environment cultivation and performance improvement tend to increase concurrently (Leigh *et al.*, 2014; Paparoidamis, 2005). Research regarding the role of leadership in sales has focused on the
importance of sales managers’ leadership styles for developing successful salespeople (Ingram et al., 2005). Based on this evidence, we propose:

**H4.** Strategic leadership for learning is positively related to performance.

**Strategic leadership for learning and organizational commitment**

Although the direct relationship between strategic leadership for learning and organizational commitment has been discussed very little, we can infer from other related studies that a relationship exists. For example, researchers have argued that leaders are responsible for supporting employees’ learning and have significant influence on learning organizations (Aragón-Correa et al., 2007; Prewitt, 2003). This is because leaders can foster successful learning climates in the workplace and enhance the quality of learning by aligning employees’ learning with their organizations’ values, needs and goals. Tansky and Cohen (2001) found that if managers perceive that their organizations support their learning, they become more committed to their organizations and try to develop other employees. Based on this justification, we suggest:

**H5.** Strategic leadership for learning is positively related to organizational commitment.

**Relationship between continuous learning opportunities and performance via strategic leadership**

HRD researchers have argued that human development efforts should be carefully designed and implemented to produce improved performances (Garavan, 1991; Swanson, 1995; Swanson and Arnold, 1996). They have also maintained that ensuring the alignment of efforts is one of the important roles of top management and line managers because success hinges on organizations’ abilities to use employees’ knowledge and skills (Garavan, 1991; Torraco and Swanson, 1995). Marsick and Watkins (2003) have argued that although HRD promotes individual learning, the efforts are not sufficient to increase performance unless the learning is embedded in an organization’s system.

Previous studies have consistently found that learning, leaders’ support and performance are closely related. Joo (2012) found that the relationship between the quality of the leader-member and job performance is mediated by the learning culture of an organization. Furthermore, Walumbwa, Cropanzano, and Hartnell (2009) found that the quality of the leader-member relationship affects job performance via employees’ learning behaviors. Prior sales management studies have found that there is a relationship between learning orientation and the leadership quality of sales leaders and salesperson performance in what Paparoidamis (2005) called a strategic learning pathway. Taken together, we anticipate that employees’ perceptions of learning opportunities will be positively related to performance through managers’ strategic leadership efforts.

**H6.** Continuous learning opportunities are positively related to and indirectly influence performance via strategic leadership for learning.

**Relationship between continuous learning opportunities and organizational commitment via strategic leadership**

Although it is widely accepted in the HRD field that providing learning opportunities is positively related to organizational commitment, some researchers have argued that the relationship varies depending on the employees (Bartlett, 2001; Maurer and Lippstreu, 2008).
Maurer and Lippstreu found that perceived organizational support for individual development is positively related to organizational commitment for employees who have their own learning goals. Based on this finding, Maurer and Lippstreu argued that employees will be more committed to an organization if their learning goals are met with the organization’s support. Bartlett (2001) also found that perceived learning opportunities are more closely related to organizational affective commitment than to how often employees actually attend training sessions or how many hours they spend on the training. Based on those findings, he argued that employees value the training opportunities that are available to them. He also argued that learning opportunities should be designed so they are relevant to employees because irrelevant training programs have a negative influence on organizational commitment. Taken together, it can be expected that strategic leadership plays a mediating role in the relationship between continuous learning opportunities and organizational commitment. Thus, we propose:

$H7$. Continuous learning opportunities are positively related to and indirectly influence organizational commitment via strategic leadership in learning.

**Methods**

*Sample and data collection*

The target population of this study was salespeople working in large for-profit organizations in Korea. Data were collected from salespeople in a large global consumer-goods company headquartered in South Korea. We chose this particular company because it is considered an exemplary large for-profit organization that provides continuous training and learning opportunities for its salespeople. As one of the 20 largest companies in terms of market capitalization in South Korea, the company has more than 2,000 full-time salespeople. This company also has international sales offices in seven different countries including the USA, China and Turkey. However, due to a lack of access to other countries’ salespeople, the data for this study were collected only from South Korea.

The sample in this study was selected using the convenience sampling method, with a human resources manager and a sales manager based at the corporate headquarters assisting in the selection of respondents. Barlett *et al.* (2001) suggested that if a researcher conducts a survey study on a population over 6,000, the minimum sample size should be 209 (margin of error = 0.03, continuous data). For this study, 260 employees (13 per cent of the entire salesforce) were randomly selected, with each employee receiving an online survey via the company’s intra-email system.

The response rate was 96 per cent, with 249 out of 260 sales employees responding to the emailed survey. Among the 249 responses, there was no missing data, but 12 cases were deleted because it was concluded that they were unreliable. For example, some of the cases showed a pattern such as 1, 2, 3, 4, 5, 1, 2, 3, 4, 5. The 33 responses that came from employees who had been working for this company less than a year were also deleted because it takes time for new employees to understand a company’s policies and leadership style. Excluding the 12 unreliable responses and the 33 responses from first-year employees, 204 cases remained for use in the present study. As expected when considering a male-dominated profession, the majority of respondents were male ($n = 182$, 89.2 per cent), and the respondents’ mean work experience was 11.7 years ($SD = 7.1$).

*Measures*

All the observed variables – continuous learning opportunities, strategic leadership, organizational commitment and performance – were measured using existing reliable
multiple-indicator measurements. All the constructs measured respondents’ perceptions using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The online surveys were administered to the participants in their native language, Korean.

Continuous learning opportunities
The variable, continuous learning opportunities, reflects an organization’s efforts to provide continuous learning and training opportunities for its employees (Yang et al., 2004). To measure continuous learning opportunities, three items from Yang, Watkins and Marsick’s (2004) Dimensions of Learning Organization Questionnaire (DLOQ) were used. Song, Joo, and Chermack (2009) assessed the reliability and validity of the DLOQ in a South Korean context and found that the DLOQ is reliable (Cronbach’s $\alpha = 0.95$; $n = 1529$) and has adequate construct validity. We administered the DLOQ in Korean, as translated by Song (2008), using a rigorous process including back-translation to increase the reliability of the instrument for cross-cultural research. The following questionnaire items were used to measure continuous learning opportunities: “In my organization, people help each other learn”; “In my organization, people take time to support learning”; and “In my organization, people are rewarded for learning.” The Cronbach’s $\alpha$ for the three items regarding continuous learning was 0.72.

Strategic leadership for learning
Strategic leadership refers to the extent to which leaders “think strategically about how to use learning to create change and to move the organization in new directions or new markets” (Watkins and Marsick, 1993, p. 7). Like continuous learning opportunities, strategic leadership was measured using three items from the DLOQ: “In my organization, leaders mentor and coach those they lead”; “In my organization, leaders continually look for opportunities to learn”; and “In my organization, leaders ensure that the organization’s actions are consistent with its values.” The Cronbach’s $\alpha$ for these three items was 0.84.

Performance
Given our limited access to the company’s performance evaluation records, performance was measured using a self-reported method. Salesperson performance refers to “behavior evaluated in terms of its contribution to the goals of the organization” (MacKenzie et al., 1993, p. 70). To measure salesperson performance (Babin and Boles, 1996), seven items were adapted. The measurement was found to be reliable in a Korean context (Cho and Park, 2011), and the reliability of the items was determined to be satisfactory (Cronbach’s $\alpha = 0.84$) in the current study. Babin and Boles’ items were originally developed for service employees at full-service restaurants and needed to be modified to fit the sales context. An example item is “My performance is above average.”

Organizational commitment
Organizational commitment was measured using eight items from Meyer and Allen’s (1991) affective commitment scale. Affective commitment indicates “one’s emotional affection toward an organization” (Meyer and Allen, 1991, p. 67). This measurement was validated in a South Korean context, and researchers have consistently found that affective commitment items are reliable and have construct validity in a South Korean as well as American context (Ko et al., 1997; Lee et al., 2001). The Cronbach’s $\alpha$ increased from 0.80 to 0.86 when the fourth item (i.e. “I think that I could easily become as attached to another organization as I am to this one”) was deleted. Consequently, only seven items were used for our analysis. One
of the seven items that was used to measure organizational commitment was “I really feel as if this organization’s problems are my own.”

Data analysis
Descriptive analysis was performed using SPSS 18. Path analysis was completed using the AMOS 18 software package to measure model-data correspondence and to test the hypotheses. According to Kline (2016), path analysis takes better advantage of information contained within the data and can calculate a goodness-of-fit statistic. The hypothesized structural model specified at the conceptualization stage was tested in comparison to an alternative model. The model supported by the data was selected based on both a comparison of statistical indices and theoretical considerations. To test the exact-fit hypothesis, indicating whether the covariances predicted by the model were consistent with the population covariance matrix, chi-square statistics were used (Kline, 2016). To measure model-data correspondence, approximate fit indices – root mean square error of approximation (RMSEA), comparative fit index (CFI), Tucker–Lewis index (TLI) and the standardized root mean square residual (SRMR) – were used based on Kline’s (2016) recommendation. With regard to Hu and Bentler (1999)’s discussion of conventional cut-off values, the recommended values are followed: RMSEA < 0.06, CFI > 0.95, TLI > 0.95 and SRMR < 0.08. The hypotheses were examined by investigating the path coefficients that were found to be statistically significant at 0.05 in the final model.

Bootstrapping – a computer-based resampling of the sample with replacement (Kline, 2016) – was used to test for an indirect effect because it is considered to be a more valid and powerful method than Baron and Kenny (1986)’s recommendation to test for mediation effects (Hayes, 2009; Shrout and Bolger, 2002). In a bootstrap test, the original data set is used as a population reservoir, thus creating a bootstrap sample. This is a random sampling with replacement. We used the bootstrap method with 2,000 bootstrap samples, satisfying the generally recommended requirements. From each bootstrap sample, the indirect effects were estimated, and the distribution of estimates was examined. When interpreting the indirect effects, confidence intervals were considered because if the range between the lower and upper bounds does not include zero, it can be claimed that there is an indirect effect (Hayes, 2009).

Results
The results of this study are reported in the following section. First, the descriptive statistics, Pearson correlations and reliabilities of the constructs are reported. Second, the hypothesized path analysis model is tested in comparison to an alternative model. Third, based on theoretical considerations and statistical indices, the best model is selected, and the results of the hypothesis testing are addressed.

Descriptive statistics
To assess the normality of the variables, skewness and kurtosis were examined with PRELIS. First, univariate normality was checked (Table II). As Table II shows, most variables had mild skewness values between −1 and 1, and all kurtosis values were between −1.3 and 7, so the data had a mild form of univariate nonnormality. Second, multivariate kurtosis was examined. Although the data did not have multivariate normality in that all p-values of skewness and kurtosis were significant (p < 0.05), the relative multivariate kurtosis had a value of 1.311 (<1.5), indicating that the data were inflated by 31.1 per cent compared with normal distribution. Based on these analyses, we concluded that our data set had a mild form of nonnormality. To assess the normality of the variables, skewness and kurtosis were examined with PRELIS. First, univariate normality was checked (Table II). As
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Before the data analysis, the normality of the variables was assessed by examining kurtosis and skewness; two statistical concepts are critical for analyzing a variable’s distribution. Skewness is the tendency of the data to lean one way or the other; kurtosis is a measure of the peakedness of the data relative to a normal distribution, whether heavy-tailed with many outliers or light-tailed with a lack of outliers (Wright and Herrington, 2011). The variables’ kurtosis values ranged from 0.113 to 0.743, while the skewness values ranged from −0.247 to −0.969. According to these values, it can be determined that the data showed univariate normality (Kline, 2016). Multivariate normality was also examined through AMOS. The multivariate kurtosis value was 5.015, and the critical ratio value was 5.169, meaning that the data exhibited a mild form of non-normality. The means, standard deviations, correlations and reliabilities among the study variables are presented in Table I. The Pearson correlations among the variables ranged from 0.27 to 0.66 ($p < 0.01$), and the Cronbach’s alphas demonstrated an adequate level of reliability (e.g. 0.72-0.86; Nunnally, 1967).

**Model estimation**

The hypothesized model was tested using the chi-square test and other fit indices. There are many fit indices, but only the chi-square, RMSEA, CFI, TLI and SRMR are reported in this study following Hu and Bentler (1999) and Kline’s (2016) suggestions (Table II). According to the chi-square test, the model did not fail the exact-fit test at the 0.05 level ($\chi^2 = 3.67, p = 0.055$), which means the model fits the data well. The model also passed the close-fit test (Hu and Bentler, 1999; $\text{TLI} = 0.91; \text{CFI} = 0.99; \text{SRMR} = 0.04; \text{RMSEA} = 0.12$), but the RMSEA provided a mixed picture. The value of the RMSEA, 0.12, was relatively poor, while the
upper bound of its 90 per cent confidence interval was especially high. Overall, it can be assumed that the model adequately fit the data.

Given these results of model fit evaluation, each path coefficient was examined. Except for the two direct paths from learning opportunities to commitment and performance, all paths were found to be statistically significant at the 0.05 level (Figure 2). Based on this result, an alternative model was proposed that fixed the two direct paths at zero (Figure 2). As this alternative model was also a recursive path model, this model was identified (Bollen, 1989; Kline, 2016). Because the alternative model was nested within the hypothesized model, the chi-square difference test was used to test for statistical significance in the decline in overall fit. According to the chi-square difference test, the difference between the models was statistically nonsignificant ($\Delta \chi^2 = 1.70, p = 0.428$). In other words, the hypothesized partial mediation model and the alternative full mediation model showed equivalent fits to the data. Furthermore, as shown in Table II, the alternative model ($M_A$: TLI = 0.98; CFI = 0.99; SRMR = 0.04; RMSEA = 0.06) showed a better fit according to the TLI and RMSEA than the original model ($M_H$: TLI = 0.91; CFI = 0.99; SRMR = 0.04; RMSEA = 0.12). The alternative model was ultimately selected based on a consideration of global fit indices, the parsimonious principle and estimated component fits (Kline, 2016).

**Hypothesis testing**

Figure 2 illustrates the relationships among variables, showing the path coefficients in both the hypothesized model and the alternative model. Regarding $H1$ and $H2$, the results of the hypothesized model suggest that the direct and positive effects of continuous learning opportunities on organizational commitment and performance were statistically nonsignificant ($H1$: standardized path coefficient = 0.10, $p > 0.05$; $H2$: standardized path coefficient = -0.06, $p > 0.05$). Therefore, $H1$ and $H2$ were not supported. In the alternative model, all the paths among the variables were statistically significant ($p < 0.05$). The relationship between continuous learning opportunities and strategic leadership for learning was also found to be strong and statistically significant ($H3$: standardized path coefficient = 0.66, $p < 0.05$). The squared multiple correlation of

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**Figure 2.** Nested model comparison between hypothesized model and alternative model.
strategic leadership for learning ($R^2 = 0.44$) indicated that about 44 per cent of the variance in the strategic leadership for learning variable could be explained by continuous learning opportunities. The direct and positive relationships between strategic leadership for learning and performance ($H4$: standardized path coefficient = 0.34, $p < 0.05$) and organizational commitment ($H5$: standardized path coefficient = 0.45, $p < 0.05$) were also significantly associated. Therefore, $H3$, $H4$ and $H5$ were all supported. In addition, approximately 9 per cent ($R^2 = 0.09$) of the variance in organizational commitment and 5 per cent ($R^2 = 0.05$) of the variance in performance were explained by the model.

According to the re-specified alternative model, strategic leadership for learning fully mediates the relationship between continuous learning and job performance and organizational commitment. To verify this indirect effect, an additional test was carried out using bootstrapping. Bootstrapping produces a bootstrapped percentile and bias-corrected confidence intervals for indirect effects. Researchers generally recommend bootstrapping when a mediation effect is detected using a small or moderately sized sample (Preacher and Hayes, 2008; Shrout and Bolger, 2002). Shrout and Bolger argued that bootstrapping is powerful because it is able to detect whether the sampling distribution of the mediated effect is skewed away from zero.

With regard to $H4$, the results of the initial model indicated that the path from EL to IRB was not statistically significant ($t = 1.408$, $p > 0.05$). The re-specified model was proposed by fixing the path to zero and according to the results of the model comparison. Based on the results of the chi-square difference test (Tables V and VI), the re-specified model was selected for the parsimonious reason ($\Delta \text{df} = 1$, $\Delta \chi^2 = 1.162$, $p > 0.05$). These results suggested that employees’ psychological ownership was statistically significant and had a full mediation effect on the relationship between ethical leadership and in-role behavior performance. Besides, the study conducted the mediation test with the bias-corrected (BC) bootstrapping procedure, using 1,000 bootstrap samples. The results presented in Table V show that the standardized indirect effects of work engagement in the relationship between job resources and job performance ($ab = 0.440$, $p < 0.01$, 99 per cent CI $[0.348, 0.532]$) and also in the relationship between job resources and turnover intention ($ab = -0.279$, $p < 0.01$, 99 per cent CI $[-0.386, -0.173]$) were both statistically significant. Therefore, both $H3$ and $H5$ were supported by the data. The study conducted the mediation test with the BC bootstrapping procedure by using 1,000 bootstrap samples. The results presented in Table V show that the standardized indirect effects of work engagement in the relationship between job resources and job performance ($ab = 0.440$, $p < 0.01$, 99 per cent CI $[0.348, 0.532]$) and also in the relationship between job resources and turnover intention ($ab = -0.279$, $p < 0.01$, 99 per cent CI $[-0.386, -0.173]$) were both.

The results of bootstrapping in this study, with a bootstrap sample size of 2,000, are illustrated in Table III. From the bootstrap test, we found that the indirect effects of

<table>
<thead>
<tr>
<th>Mediation path</th>
<th>$ab$</th>
<th>SE</th>
<th>Bias-corrected 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLO→SLL→P</td>
<td>0.297</td>
<td>0.038</td>
<td>[0.093, 0.247]</td>
</tr>
<tr>
<td>CLO→SLL→OC</td>
<td>0.224</td>
<td>0.052</td>
<td>[0.201, 0.407]</td>
</tr>
</tbody>
</table>

Notes: Estimate: $ab =$ standardized estimate of the mediating effect; CI = confidence interval; $LL =$ lower limit; $UL =$ upper limit; CLO = continuous learning opportunity; SLL = strategic leadership for learning; P = performance; OC = organization commitment
continuous learning opportunities on performance ($H_6$: $ab = 0.22$, 99 per cent CI [0.093, 0.247], $p < 0.01$) and on organizational commitment ($H_7$: $ab = 0.30$, 99 per cent CI [0.201, 0.407], $p < 0.01$) via strategic leadership were statistically significant. Therefore, both $H_6$ and $H_7$ The results presented in were supported. From this result, we were able to determine that one standard deviation change in learning opportunities predicts a 0.30 standard deviation change in affective commitment to an organization and a 0.22 standard deviation change in performance via strategic leadership.

Discussion and conclusion

The results of this study show that strategic leadership for learning positively impacts the relationship between continuous learning opportunities and salesperson performance and organizational commitment. In other words, the extent to which a sales manager strategically plans how to use learning to facilitate changes and development within the organization positively affects salesperson outcomes. Although readers should be cautious when generalizing these results, our findings suggest that providing employees with learning opportunities may not singlehandedly affect salesperson performance and organizational commitment. As such, leaders should demonstrate strategic leadership for learning along with the delivery of these learning opportunities if they wish to increase salesperson performance and commitment. We offer several explanations for these results.

Researchers have argued that creating a continuous learning environment improves performance (Ellinger et al., 2002; Davis and Daley, 2008) and organizational commitment (Ashar et al., 2013; Bulut and Culha, 2010; Islam et al., 2013; Owoyemi et al., 2011; Rose et al., 2009). Sales organizations typically provide continuous learning opportunities for their salespeople in the form of sales training because the organizations’ leaders understand that when salespeople do well, the organizations do well. However, the results of our study challenge the belief that providing learning opportunities, without attending to strategic leadership, improves salesperson performance and organizational commitment. Our results illustrate that the relationship between continuous learning opportunities and performance, as well as between opportunities and organizational commitment, is statistically nonsignificant. However, we did find that providing continuous learning opportunities via strategic leadership for learning, that is aligning salesperson training with the goals of the organization, increases both performance and organizational commitment.

These findings align with the SHRD theory that top management and line managers should involve and engage with employees’ learning and development (Garavan, 1991; McCracken and Wallace, 2000). Leaders in organizations can develop a supportive learning culture and demonstrate a link between learning and performance (Garavan, 1991). The leaders can also mentor and coach employees’ learning by advising how to select learning opportunities and integrate learning with work and performance. In this regard, leadership for learning plays a critical role in the relationship between learning opportunities and organizational commitment.

Our findings are also consistent with those of several studies on organizational learning (Dirani, 2009; Kohli et al., 1998; Kontoghiorghes et al., 2005). After examining the relationship among learning organization culture, job satisfaction and organizational commitment in Lebanese banking companies, Dirani found that creating a continuous learning environment does not predict organizational commitment or job satisfaction. Dirani also found that when leaders strategically use employees’ learning to support business objectives, employees become committed to their organizations. The findings of our study corroborate Dirani’s findings in terms of emphasizing the importance of strategic leadership in individual learning and organizational needs. Kontoghiorghes and his colleagues similarly
argued that organizations that wish to link employee learning and performance should prioritize empowerment and open communication.

Although the standardized path coefficient from learning opportunities to organizational commitment (standardized path coefficient = −0.06) was not significant in the hypothesized model, it is worthy of attention as it showed a negative relationship. This negative relationship may explain salespeople’s increasing turnover intentions. When an employee perceives that the available learning opportunities will enhance his or her own employability or self-branding, he or she is likely to leave the organization after taking advantage of the learning opportunities.

Overall, the results of this study reveal the critical role of leaders in linking learning with both commitment and performance. When learning happens at the individual level through learning opportunities, leaders are more likely to capture and embed the learning into their organizational structures by connecting this learning to organizational goals. When leaders consistently coach or mentor employees throughout the learning process and promote the development of a learning environment, their strategic leadership will increase employees’ task performances and levels of organizational commitment.

In other words, when employees believe that they are working with an ethical leader, they are more likely to feel a sense of ownership of their organization. In turn, employees’ psychological ownership induces them to behave desirably when performing their jobs in the workplace, although employees’ perception of their leaders’ ethics does not directly influence their in-role behavior performance.

**Implications**

Our findings have both theoretical and practical implications for top management, sales managers and administrators in sales organizations. First, our findings contribute to theories of SHRD and learning organization by offering a new perspective on the importance of leadership. The indirect effect of strategic leadership for learning opens up a new pathway for understanding how learning affects performance and organizational commitment. Our findings indicate that leaders play a critical role in connecting learning with performance and organizational commitment.

For sales leaders who wish to influence salesperson performance and commitment, this study provides actionable guidance. Unlike previously proposed explanations of the determinants of salesperson performance, such as social networks (Bolander et al., 2015; Üstüner and Iacobucci, 2012) and customer orientation (Cross et al., 2007), which rely more heavily on the individual salesperson, our study suggests that sales leaders can directly develop salespeople by providing quality leadership. Many sales organizations try to create continuous learning environments in the workplace by providing training opportunities designed to increase salesperson performance and organizational commitment. However, this study shows that providing learning opportunities without attempting to align these efforts with organizational goals and values is futile because learning opportunities alone have no effect on salespeople’s performance improvement or their organizational commitment. It is critical for sales leaders not only to provide and clearly communicate these continuous learning opportunities to their salespeople but also to create learning environments that foster organizational commitment and sales performance. This research provides a clear path for sales leaders to develop and retain salespeople. As such, sales leaders and workplace learning professionals should keep in mind that when they attempt to develop learning opportunities for their employees, the opportunities should be relevant to the employees’ work and aligned with the companies’ values, needs and goals.
This study also provides significant implications for HRD managers and workplace learning professionals. Given the importance of the role of leaders, it is critical that HRD professionals support and collaborate with leaders to integrate learning, performance, and organizational commitment. Our findings show that even though organizations provide sufficient learning opportunities for the employees, the learning opportunities could be useless without strategic leadership for learning. Leaders, however, tend to be passive regarding employees’ learning and development issues due to lack of communication skills, lack of confidence for the role, and conflicting priorities (Garavan, 1991). Therefore, for organizations to benefit from employee learning, HRD managers and professionals should support their leaders and empower them to lead.

**Limitations of this study**

The findings of this study should be interpreted in light of the following limitations. One of the most important limitations of this study is that it used cross-sectional and self-reported data. Causality between variables should not be inferred based on this cross-sectional data, as all of the variables were measured at the same time. If the variables had been able to be measured several times to test the mediation effect, there might have been stronger evidence to support this mediation effect (Kline, 2016). Furthermore, using objective data such as sales volume and sales revenue would also enhance the accuracy of the results, allowing for the avoidance of rating bias in the measurement of salesforce performance. However, such data were not available for this study.

Another limitation of this study is that all the data were collected from a single Korean firm, a consumer goods company. Although random sampling would help reduce the selection threat, this study used convenience sampling, which warrants caution in generalizing from the results to different countries, cultures, companies or industries. A final limitation is that this study looks at the personal selling profession without taking into consideration the selling context of business-to-consumer or business-to-business. Given these limitations, readers should be careful when interpreting or applying these results to different national, industry or organizational contexts.

**Recommendations for future studies**

Based on the limitations previously mentioned, we have recommendations for future studies that we believe would make exciting contributions to the field of sales and workplace learning. To be able to generalize from the findings of this study, we suggest that more diverse samples drawn from various companies, industries and countries be included in future studies. Researchers should also distinguish between the business-to-consumer and business-to-business selling contexts. Business-to-business selling is very different from direct sales to consumers, as in the former case, businesses target their efforts to other businesses rather than to consumers and therefore require different types of training.

Furthermore, future studies should use objective performance measurement data based on individuals’ sales performances. A comparison study across organizations and industries would also be interesting. Depending on the size of the organization or the industry with which the organization is associated, relationships among the variables may vary. Future research should also examine the relationship between organizational commitment and performance, as preliminary research has suggested that the sales profession requires a higher level of commitment than other professions (Jaramillo et al., 2005). We also suggest that other related variables such as turnover intentions, job satisfaction and work engagement to be included in future studies to enrich scholars and practitioners’ understanding of the relationships.
References


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HRD competencies: analysis of employer expectations from online job postings

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Abstract

Purpose – The purpose of this paper is to inform the preparation of HRD professionals by providing an empirical analysis of the knowledge, skills, and responsibilities employers expect in the workplace.

Design/methodology/approach – This study reports a qualitative content analysis of online HRD job postings.

Findings – Results of this content analysis indicated that the most recent employer expectations for HRD practitioners as reflected in HRD-related job postings for knowledge and responsibilities were instructional design, training delivery, learning management systems, and learning technologies. The outcomes reinforced that employers specifically expect education technology-based knowledge and skills.

Research limitations/implications – The job postings included in the study were all collected from one source, the Association for Talent Development job site.

Practical implications – Educational programs can use these findings to inform curricular decisions related to knowledge and skills to be taught and practiced during the preparation of L&D practitioners and HRD professionals.

Originality/value – This paper analyzes online HRD job postings to understand what knowledge and skills employers expected from L&D practitioners and HRD professionals.

Keywords HRD education, Learning and development, Employment, Employer expectations, HRD competencies, HRD curriculum, HRD professionals, Job postings

Paper type Research paper

Keeping curriculum current for future learning and development (L&D) practitioners and human resource development (HRD) professionals is necessary to maintain currency with technology and prepare the students for job-ready talent development skills. Within the large number of educational programs around the globe with a goal to prepare students to acquire positions to work as L&D practitioners or HRD professionals, the educational focus has shifted from developing workforce trainers, adult educators and vocational teachers to one of complexity in learning, development and change (Kuchinke, 2015). Even though accredited programs seek to adhere to standards developed and approved by the accrediting organizations (Dooley, 2014), it has been, and continues to be, imperative to keep track of

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industry requirements and needs that inform educational program curricula. Employer needs largely determine the goals and objectives in academic HRD programs and core competencies are often based on knowledge and skills required in the practice of HRD (Chalofsky, 2007). This requisite entails HRD programs to keep pace with the evolving nature of work and demands on HRD professionals. When job roles and their requirements are amorphous and specified by the industry in which they are situated or when roles are constantly changing with external conditions (Harper, 2012), as it is in the field of HRD, studying job postings and advertisements is particularly relevant.

From a human resource supply perspective, understanding the trends in the field and the knowledge and skill requirements of employers is important for educational programs to adequately prepare professionals to enter and thrive in the field. Although other occupational areas such as library science and information technology have consistently analyzed job postings (Frankenfeld, 2017; Meyer, 2017; Stanton, 2017), there is limited academic research in the HRD field over the past 10 years that has analyzed employer expectations from job postings, especially in the USA and UK. To address this gap in literature, this research provides documentation of foundational competencies driven by employers such that educational programs can make curricular decisions to better prepare HRD professionals to meet the needs of the employers.

At the practitioner level, professional organizations, such as the Association for Talent Development (ATD; formerly the American Society for Training and Development), publish in regular intervals competency frameworks that represent the expertise required by employers. The competency models published by professional organizations such as the ATD are based on large-scale interviews and surveys with employers (Armeson et al., 2013a, 2013b). Employer surveys and interviews are the most common means of forecasting skills requirements and future trends within an industry; however, they do not always provide reliable representations of actual needs of employers (Wilson, 2008).

Depending solely on employers’ predictions about future expectations to understand industry trends and requirements could be problematic because the forecasts have the potential to be fuzzy or idealistic and, therefore, might fail to capture or accurately predict the concrete demands of the industry in the near future (Lanier, 2009; Wilson, 2008). Educators need other methods to reinforce and complement survey-based analyses of industry requirements. Content analysis of job postings “overcomes the weakness of surveys, with preselected variables, by studying how employers explicate their needs, untrammeled by the assumptions of researchers” (McArthur et al., 2017, p. 84). From a labor market perspective, job postings capture the expectations of employers in specific fields and serve as signals from organizations indicating the demand side of the market (Ahmed, 2005; Choi and Rasmussen, 2009; Ahsan et al., 2013).

**Job postings and employer expectations**

Analysis of job postings is a commonly used methodology to study the job market and assess the changing requirements of an industry or the demand side of the skills equation. The Bureau of Labor Statistics uses job openings in a particular field to measure the labor supply and demand (Clark and Hyson, 2001). Researchers in fields such as Information Technology and Library Science consistently examine online job postings to identify changing expectations of employers and the trends in the fields that could inform the academic preparation in the field (Harper, 2012). Content analysis of job postings has been used in fields such as performance consultant (Carpenter et al., 2015); marketing education (Wellman, 2010; Schlee and Harich, 2010), human resources (Chromey, 2013), project management (Ahsan et al., 2013), communication (Rosén, 2014) and graduate employability
Interestingly, there is limited academic research in the field of HRD in the last decade that analyzed HRD job postings to understand the needs of employers in the field or the changes in skill expectations. To fill this literature gap, this research, an analysis of online HRD job advertisements posted over a two-year period, investigated the knowledge and skills employers specified within the postings. The intent of the research was to inform the programs for education and training of future HRD professionals. The goal of the study was to create a baseline for employer requirements in HRD that could serve as a foundation from which to advance the future educational program development. Baseline studies, such as this, enable the examination of trends in competency requirements within HRD from time to time, and cross check and complement existing lists of required competencies outlined by professional organizations that inform academic preparation.

**Online job postings as signals of employers’ requirements**

Online recruiting is the process of identifying and attracting potential employees through the Internet (Lanier, 2009). It is the fastest growing recruitment medium in the twenty-first century due to factors such as widespread access to the internet, preference for electronic media, lower costs, ease of posting and wider reach (Carnevale et al., 2014). Organizations have increasingly used their company websites; professional job sites such as Indeed, Career Builder, Glassdoor and Monster or social media websites such as LinkedIn; and job sites of field specific professional organizations such as ATD to post announcements regarding vacant positions (Kock et al., 2012; McCabe, 2017; P and Nagi, 2017). In fields that cut across industries such as HRD, posting job advertisements online through one or many sites enables organizations to reach a wider range of potential employees across geographic locations, industries and access points (Carnevale et al., 2014).

Job advertisements are one of the recruiting strategies that organizations use to attract the right talent (Breaugh, 2013) and to propagate its mission, values and culture (Avery, 2003). Besides serving the primary purpose of attracting the right talent to the organization, job advertisements also serve as branding tools that market the organization to the potential employee as a desirable place to grow and develop her or his future (Breaugh, 2008). Moreover, job postings are also advertising tools that promote “a ‘product’ (a paid employment position) in exchange for ‘capital’ value (the skills and competencies of the successful candidates)” (Harper, 2012, p. 31). By laying out the expected cluster of competencies, qualifications, experiences and attributes, job postings also enable applicants to self-select themselves in or out of the selection process (Ahsan et al., 2013).

**Analyzing job postings**

Analysis of job postings is a commonly used methodology to study the job market from various perspectives. Research on recruitment as a business process has been conducted to evaluate the effectiveness of job postings in attracting the right talent into the organization (Breaugh, 2008). When assessed from a marketing perspective, job advertisements were analyzed in terms of their ability to sell jobs and also their role in establishing the brand of the organization (Wilden et al., 2010). Organizational communication research examined the content of the message of the job advertisements as signals that employers send out to their potential employees about the organization and their brand (Backhaus, 2004). Job postings were also analyzed to understand and codify the expectations of employers in specific fields (Ahsan et al., 2013; Wellman, 2010; Rosén, 2014; Diamond et al., 2014). Examining job postings has enabled the investigation of generic expectations of employers in a particular field and lead to a more updated understanding of the current employment environment (Harper, 2012; McArthur et al., 2017).
Studying job advertisements is particularly relevant when job roles and their demands are amorphous and determined by the industry; where they are situated in or are constantly changing with external conditions (Harper, 2012; McArthur et al., 2017), as it is in the field of HRD. Rosén (2014) argued that as a data source for studying employability, large samples of employment advertisements are possibly the most valid source for research, and though many thousands of job ads are published every day, “these apparently small and trivial texts have, so far, not created much interest within social science” (p. 20). Online job advertisements are useful as a proxy for labor demand, enable analysis of changes in labor market in real time and identification of knowledge and skills requirements of employers, and guide curriculum development (Carnevale et al., 2014). Job postings provide a “current analytical picture of labor supply and demand” (Carnevale et al., 2014, p. 7) and are a reliable indicator of hiring trends (Templin and Hirsch, 2013). Most importantly, job advertisements can inform curriculum development and enhancement, academic advising and job seeking implications for new graduates (Reeves and Hahn, 2010). Even though examination of job advertisements might not provide a comprehensive picture of the labor market, the process allows summation of the short to mid-term direction of the demand of a particular field (Kennan et al., 2006; Marion et al., 2005).

Experiencing competency requirements in human resource development
Adult educators have been focusing on the cluster of knowledge, skills and abilities required by practitioners in the field since the late 1930s. However, the definition of competency differed by the approach taken and the field to which it was applied (Rothwell, 1996). Within the fields of adult learning and training and development, competency was defined as a cluster of knowledge, understanding, skills, attitudes, values and interests (Knowles, 1980). Early champions of the competency-based approach defined competency with a focus on characteristics that could be observed (Chouhan and Srivastava, 2104). Competencies transitioned from “an underlying characteristic of a person which results in effective and/or superior performance on the job” (Klep, 1980, p. 1) to inclusion of knowledge, skills and abilities (Chouhan and Srivastava, 2104). The ATD used competencies as means for describing performance and valued them as “a guide for identifying the knowledge, skills, and behaviors that practitioners need to be successful performers” (Arneson et al., 2013b, p. 44).

Studies that explored the competency requirements (competency studies) in HRD in North America reflect the evolution of the field. The early studies (late 1930s) in the field focused on knowledge, skills, abilities and activities of adult educators until the trend shifted toward training and development in the late 1960s (Chouhan and Srivastava, 2014). The competency studies of the 1970s until almost the mid-1980s focused primarily on roles, competencies and activities of training and development professionals (Chouhan and Srivastava, 2014; McLagan, 1989). With the inclusion of organization development (OD) as an area of focus within HRD in the 1980s, HRD competency studies started including OD competencies (Yeung, 2009). Instructional design was another area that received attention in the competency studies in the mid-1980s, while career development was included in the late 1980s (Boyatzis, 1982, 1996, 2007). The HRD in the 1990s witnessed a shift towards performance and performance improvement and consequently, the competency studies of this era identified roles, competencies and outputs of human performance improvement professionals and consultants (Dubois, 1998; Evarts, 1988; Woodall and Winstanley, 1998). In the late 1990s when the term “Training and Development” was replaced by “Workplace Learning and Performance” (WLP), ATD’s competency studies focused on competencies of WLP practitioners at different levels within the organization (Dubois et al., 2004). The HRD
competency studies conducted around the turn of the twenty-first century reflected the vast leaps in technology and focused on competencies required by HRD professionals to use learning technology on their jobs (Alonso et al., 2015).

Interestingly, investigating the overall set of competencies required in the HRD field is not a popular area of research focus in the past decade, with very few studies emerging from the USA. Review between each journal’s initial article and 2017 of the content of all journal articles published in the four primary Academy of HRD (AHRD) journals, Human Resource Development Quarterly, Human Resource Development Review, Advances in Developing Human Resources and Human Resource Development International, revealed that there were 65 articles that included the term “competency model” within the article or its citations; only seven of the articles used “competency model” more than ten times in the article’s body and citations. Although a number of articles examined competencies for a specific industry (Busch, 2013; Grandy and Holton, 2012; Watkins and Drury, 1999), education level (Greer and Collins, 2017; Lee, 2009; Nimon and Roberts, 2017), high-performance leadership model (Collins et al., 2000) or impact of internships (Sawyer, 2017), within this body of work, it was determined that only a limited number of peer-reviewed articles focused on examining competencies required in the HRD field and evaluated them through the lens of other models. One study in particular explored the general competencies for HRD scholar-practitioners and used the competencies represented in the ATD and Society for Human Resource Management models as the basis for analysis of practitioner competencies (Kormanik et al., 2009). Another focused on the diagnosis and assessment of HRD competencies in a resource-based model (Clardy, 2008). Most of the studies related to HRD competencies published during the period, 2000-2017, in other journals were primarily situated in Asia (Korea, Taiwan, Thailand) and Africa (Anderson, 2017; Cho, 2017). From the trends in the HRD and Training and Development journals, it is apparent that practitioner competencies in the field have not been revisited frequently by academic researchers outside of professional organizations. As such, the competency models put forth by ATD have been accepted as the standards in the field that outline the competency requirements for HRD professionals.

In other fields and professional organizations similar to AHRD, researchers have conducted studies on competencies required and have developed models that represent the fields’ trends and the knowledge, skills and abilities required to respond to the trends. The Ireland-based Chartered Institute of Personnel Development has its own CIPD model (Corbett, 2016), as does the Canadian Society of Training and Development, CTSD, a model and certifications (Carliner, 2012). The International Board for Standards in Training, Performance and Instruction (IBSTPI) has competency models for job roles in the field (Klein et al., 2004). The most recent competency model in the field of HRD was launched by ATD in 2013 with the intention to reflect emerging technologies in the field and as a means to move away from the perspective of training and development professionals as deliverers of training to one where they are facilitators of learning; and to foster a culture of connectivity and collaboration through social media and technology (Arneson et al., 2013a, 2013b). Because competency models are effective tools to identify and communicate expectations (Kormanik et al., 2009), they are useful in recruitment process to indicate expectations and hire candidates that match the specifications.

**Association for Talent Development framework**

This study used the 2013 ASTD (now ATD) Competency Model as the framework to examine the competency requirements in the HRD field as represented in job postings. Chosen for two main reasons, the 2013 ASTD model primarily reflects the HRD field in
the USA where the job postings were collected, and it is the most recently updated competency model in the field. Although inherently different in design from the two-structure pyramid model of 2004, the 2013 ASTD Competency Model was built from the organization’s 2004 model. The recent model eliminated the four primary training and development roles from the earlier model and refined the areas of expertise (AoEs) and the foundational competencies to reflect the context in which the field of training and development operated (Arneson et al., 2013a, 2013b). The 2013 ASTD model consists of ten AoEs supported by six foundational competencies. Whereas the AoEs indicated the “specialized, functional knowledge” required by training and development professionals in the current times, the foundational competencies were more generic “proficiencies and characteristics” that training and development professionals were required to demonstrate on their jobs across industries (Arneson et al., 2013a, 2013b). The ten AoEs identified in the model are:

1. change management;
2. performance improvement;
3. instructional design;
4. training and development;
5. learning technologies;
6. evaluating learning impact;
7. manage learning programs;
8. integrated talent management;
9. coaching; and
10. knowledge management.

The six foundational competencies are:

1. business skills;
2. global mindset;
3. industry knowledge;
4. interpersonal skills;
5. personal skills; and
6. technology literacy (Arneson et al., 2013a, 2013b).

The framework of the ASTD 2013 Competency Model is based on interviews and surveys and reflects what employers identified as the competencies they expected their potential HRD employees to demonstrate. However, neither the ASTD study nor competency related academic research examined job advertisements empirically to verify the alignment between what competencies or expertise employers say they want (desired or idealized state) and what they actually ask for (on the job requirement). Having said that, it should be admitted that whether job advertisements actually reflect the actual need of the employer in terms of competencies required to perform a function, or whether the postings are also idealistic representations of their requirements continues to be debated (Carnevale et al., 2014). Nevertheless, analyzing what employers actually ask for in their job advertisements can actually provide a reality check and help refine existing competency clusters and models, and, more importantly, help prepare practitioners more effectively and efficiently for the industry (Kormanik
et al., 2009). This study, therefore, conducted an empirical analysis of competencies asked for by employers in online HRD job postings using the ASTD 2013 Competency Model as a framework. The goal was to investigate the alignment between HRD specific AoEs identified in the model and the actual knowledge and skills sought by employers; and if there were any patterns of employer expectations emerging from the analysis that could inform the academic preparation of HRD professionals in the immediate future.

Study rationale
Examination of job postings has enabled the investigation of specific requirements and intent of employers (Shen and Kuhn, 2013); and has helped to glean generic expectations for potential employees in the HRD field. Such exploration has led to a more updated understanding of the current employment environment in the field (Harper, 2012). Although a search of Google Scholar from 2008 to 2018 for the terms “job ad”, “job posting”, HRD resulted in 118 articles and books, none of these publications addressed the analysis of job postings for informing HRD educational programs. The majority were related to using online job postings as an HR strategy for marketing positions to selected audiences. Therefore, there are no studies within HRD in the past 10 years that examine job postings to understand what knowledge and skills or competencies employers expect from HRD professionals. Academic preparation of HRD professionals cannot stay updated and relevant without periodic investigation of labor market expectations and trends in knowledge and skills requirements in the field. The purpose of this research was to inform the preparation of HRD professionals by providing an empirical analysis of the knowledge, skills and responsibilities employers expect in the workplace, and outlined in HRD job postings.

To explore the skill and performance expectations of future employees, the following research questions were asked:

RQ1. What are the most recent employer expectations for HRD practitioners as reflected in HRD-related job postings?

RQ2. How representative are the knowledge and responsibilities in recent HRD-related job descriptions of the 2013 ASTD Competency Model framework AoEs?

RQ3. What are the training related knowledge and responsibilities that employers specifically expect from HRD professionals?

Methodology
We used content analysis to examine online HRD job advertisements. Content analysis is a research methodology used to analyze verbal or visual messages (Cole, 1988). Rather than collecting content from participants, researchers using content analysis as a tool take “communication people have produced and ask questions of communication” (Kerlinger, 1973). Using this technique, researchers make valid inferences about the sender, the audience or the message itself (Krippendorff, 2004). Researchers have used this methodology for a variety of purposes ranging from analysis of discriminatory practices in the media, change in cultural symbols, speeches and campaign messages of political leaders to content of academic curricula and topics covered in field specific journals. Specifically, in the field of
library information science, content analysis has been the primary research tool in the analysis of job postings for more than four decades (Harper, 2012).

Even though content analysis is a recognized research methodology, it is relatively rare in HRD literature. HRD authors used this method primarily to analyze topics covered in HRD curriculum (Kuchinke, 2007) or analyze course offerings in academic programs against topics covered in articles in the HRD journals (Ardichvili and Oh, 2013; Zachmeier and Cho, 2014). Very few studies (Bartlett and Porter, 2002; Brooks et al., 2003) in HRD have used content analysis as a primary research method to analyze HRD job postings, especially in the USA. Unlike these studies which analyzed HRD job postings in regional (Bartlett and Porter, 2002; Brooks et al., 2003) or national newspapers, this study used content analysis to examine HRD job postings on the internet.

One of the purposes of content analysis, according to Berelson (1952) is to describe the characteristics of content and check the communication content against a standard or framework. In this study, we followed this structured or directed approach (Hsieh and Shannon, 2005) of deductive analysis, whereby we analyzed the content of the job postings to cull out competencies (knowledge, skills and abilities) employers expected potential employees to possess or demonstrate. We then compared this ‘content’ consisting of expected HRD knowledge and skills against the competencies identified in the 2013 ASTD Competency Framework.

Data collection and coding
First step in the process of data collection was determining the source of the data, whereby we determined the job portals that could yield rich HRD specific job postings. Our preliminary analysis of job sites showed that when compared to other popular job sites such as monster.com and LinkedIn, that host multitudes of postings for generic HR or HRM related positions, the ATD job portal offered access to many more HRD focused job postings. This was not surprising, as ATD is the primary professional association for training and talent development professionals in the USA. Therefore, we used HRD job postings on the ATD job portal as our source of data for the study.

In conducting our deductive content analysis of the job postings, we followed the general steps suggested by Stempel (1989). Once the research questions were determined, we created a coding sheet that represented the ten AoEs which are the “specialized knowledge and actions required by specific roles”; and the six foundational competencies (FCs) which are “characteristics and proficiencies that training and development professionals must demonstrate to be successful in the current business environment” (Arneson et al., 2013b). Next, we created sub-codes under each of main codes to reflect the task statements or activities that accompanied the AoEs and the FCs in the model.

For purposes of assessing the relevance of the aggregated raw data and the accuracy of the codes we developed, we then, pilot tested with the first 50 job postings. During this phase, we classified the content into the previously determined categories and then, to ensure that our coding scheme was accurate and captured the expectations of the employers accurately, we manually sifted through our data looking for keywords and phrases that were identical to the ten AoEs identified in the ASTD model. Our analysis revealed that employers used certain key terms and phrases in different forms or used them in contexts not covered under the specific category in the model. For instance, terms like “training” and “learning” were used interchangeably, or the term “performance” was used more in the context of appraisal rather than in relation to analysis and improvement. Based on our learning from the pilot phase, we modified our search criteria to accommodate the multiple ways in which employers expressed their requirement of a particular specialized knowledge
or ability corresponding to a particular ASTD AoE. Second, when a keyword or phrase was used in generic terms or in multiple places, we tried to place it in context of the job posting and attempted to make sense of the intention of the employer based on the context of use and coded them against the AoEs and FCs accordingly. For instance, “project management” or “managing and implementing projects” appears as task statements or activities at least under two different AoEs in the ASTD model (performance improvement and managing learning programs). Therefore, whenever the phrase “project management” or “managing projects” was located in the data, the researchers went to the context of the job posting and determined if the phrase was used in relation to Performance Improvement or Managing Learning Projects and coded accordingly.

When we completed the pilot test and refined our coding scheme, we collected 500 job postings from the ATD portal between July 2015 and June 2017, using all ten AOEs of the ASTD 2013 model in addition to terms such as “training”, “trainer”, “training and development”, “Human Resource Development” and “United States” as keywords. Because the goal was to examine jobs in the HRD field specifically within the USA, we discarded job postings that contained elements of training but were predominantly industry specific positions such as “Sales Trainer” or “Nurse Educator”, that asked more for industry specific competencies rather than HRD or training related competencies. We also eliminated job postings that were duplicated across the data set and those that contained incomplete or very sparse details. Cleaning of the data yielded 459 usable job postings.

Once the data set was finalized, researchers developed a coding sheet that represented the ten AoEs and their accompanying sub-codes that reflected the task statements or activities. The coding framework included education qualifications, work experience, knowledge, skills, technical skills, industry and additional information and responsibilities. Subsequently, we manually went through individual job postings to locate each code, counted the number of times this code appeared in the data and most importantly kept track of the counted codes to avoid duplicate counting. The job postings collected were predominantly from the following industries: health, education, manufacturing, technology, retail, government, banking, sports, insurance, non-governmental or not for profit, consulting, food, hotel, energy and entertainment (Table I).

Interestingly, once we completed the coding process, we found a large chunk of data that fell outside the ASTD 2013 driven coding scheme. Analyzing the uncoded data or the data that was left over, we found pertinent content not covered by the codes reflecting the ASTD 2013 AOEs and the FCs. We therefore, decided to examine the remaining data to identify knowledge, skills and abilities that employers asked for, but were not covered in the 2013 ASTD model. These other categories not within the 2013 ASTD model within the framework for knowledge, skills and additional information and responsibilities were coded as adult learning, learning management systems, organizational development, strategic planning and systems thinking, ADDIE model and leadership.

Data calculations
To answer RQ1, we determined the counts of the AOEs and other AOEs coded then divided by the total number of job ads evaluated, \( n = 459 \), to determine the percentage of each. These values are displayed in Table II within the AOE Total column and in Table III within the Other AOE Total column. To answer RQ2, we first counted the number of times the AOEs were coded as a knowledge requirement or as a responsibility requirement within the job ads. Similar to the process for determining the percentages for RQ1, we divided the frequency for each AOE and other AOE by the number of job ads evaluated, \( n = 459 \). An evaluation of the percentages to rank the
AOEs and other AOEs followed the calculations to assess the representation of the knowledge and responsibilities coded. To answer RQ3, we used the rank order from RQ2 and the definitions of each of the AOE and other AOE to determine the training related knowledge and responsibilities that would be required by employers. We also determined the percentage of the total job ads that were coded into the knowledge and responsibility codes by academic requirement. Although the job ads had listings for educational requirements to have earned a high school diploma or an associates’ degree, or did not have an entry, we did not report these separately; their values are included within the total percentages. We did determine and report the percentages by

<table>
<thead>
<tr>
<th>Category label</th>
<th>Terms coded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education qualifications</td>
<td>High School, Bachelor’s, Master’s preferred, Master’s required, Ph.D,</td>
</tr>
<tr>
<td></td>
<td>Associate Degree/Certification</td>
</tr>
<tr>
<td>Work experience Knowledge</td>
<td>Less than 1 yr, 1yr&gt;3yrs, 3yrs&gt;5yrs, 5yrs&gt;10yrs, 10yrs+</td>
</tr>
<tr>
<td></td>
<td>Instructional Design, Training Delivery, Learning Technologies, Evaluating</td>
</tr>
<tr>
<td></td>
<td>Learning Impact, Managing Learning Programs, Integrated Talent Management,</td>
</tr>
<tr>
<td></td>
<td>Coaching, Knowledge Management, Change Management, Performance Improvement,</td>
</tr>
<tr>
<td></td>
<td>Adult Learning, LMS, Organization Development, Strategic Planning/Systems</td>
</tr>
<tr>
<td></td>
<td>Thinking, ADDIE, Leadership</td>
</tr>
<tr>
<td>Skills</td>
<td>Interpersonal/Communication skills, Project management skills, Oral and</td>
</tr>
<tr>
<td></td>
<td>written skills, Collaboration skills, Networking and relationship building</td>
</tr>
<tr>
<td></td>
<td>skills, Leadership skills, Global Mindset, Industry Knowledge, Personal</td>
</tr>
<tr>
<td></td>
<td>skills, Business Skills, Technology literacy, Presentation Skills,</td>
</tr>
<tr>
<td></td>
<td>Facilitation skills, Listening Skills</td>
</tr>
<tr>
<td>Technical skills</td>
<td>Articulate Storyline, Camtasia, LMS, Captivate, SCORM, Publishing,</td>
</tr>
<tr>
<td></td>
<td>Microsoft Suite</td>
</tr>
<tr>
<td>Industry</td>
<td>Health, Education, Manufacturing, Technology, Retail, Government, Banking,</td>
</tr>
<tr>
<td></td>
<td>Sports, Insurance, NGO/NPO, Consulting, Food, Hotel, Energy, Entertainment</td>
</tr>
<tr>
<td>Additional information and</td>
<td>Instructional Design, Training Delivery, Learning Technologies, Evaluating</td>
</tr>
<tr>
<td>responsibilities</td>
<td>Learning Impact, Managing Learning Programs, Integrated Talent Management,</td>
</tr>
<tr>
<td></td>
<td>Coaching, Knowledge Management, Change Management, Performance Improvement,</td>
</tr>
<tr>
<td></td>
<td>Adult Learning, LMS, Organization Development, Strategic Planning/Systems</td>
</tr>
<tr>
<td></td>
<td>Thinking, ADDIE, Leadership</td>
</tr>
</tbody>
</table>

**Table I.**

**Coding framework**

<table>
<thead>
<tr>
<th>ASTD 2013 areas of expertise</th>
<th>Knowledge (%)</th>
<th>Responsibility (%)</th>
<th>AOE Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional design</td>
<td>25.9</td>
<td>22.4</td>
<td>48.4</td>
</tr>
<tr>
<td>Training delivery</td>
<td>25.5</td>
<td>29.6</td>
<td>55.1</td>
</tr>
<tr>
<td>Learning technologies</td>
<td>19.2</td>
<td>12.2</td>
<td>31.4</td>
</tr>
<tr>
<td>Evaluating learning impact</td>
<td>9.4</td>
<td>10.5</td>
<td>19.8</td>
</tr>
<tr>
<td>Managing learning programs</td>
<td>1.3</td>
<td>5.9</td>
<td>7.2</td>
</tr>
<tr>
<td>Integrated talent management</td>
<td>4.8</td>
<td>5.4</td>
<td>10.2</td>
</tr>
<tr>
<td>Coaching</td>
<td>7.0</td>
<td>7.6</td>
<td>14.6</td>
</tr>
<tr>
<td>Knowledge management</td>
<td>0.9</td>
<td>2.4</td>
<td>3.3</td>
</tr>
<tr>
<td>Change management</td>
<td>6.1</td>
<td>7.2</td>
<td>13.3</td>
</tr>
<tr>
<td>Performance improvement</td>
<td>3.1</td>
<td>7.4</td>
<td>10.5</td>
</tr>
</tbody>
</table>

**Table II.**

Percentage of requirements by knowledge and responsibility elements of 2013 ASTD AOE

**Note:** $n = 459$
knowledge and responsibility by educational requirements for bachelor’s, master’s and doctoral degree levels. These are depicted in Figures 1-4.

Findings

The total percentage of requirements for each of the AOEs (Table I, AOE Total column) with three greatest occurrences within the job postings were the AoEs: Training Delivery (55.1 per cent), Instructional Design (48.4 per cent) and Learning Technologies (31.4 per cent). Although each of the ten AOEs were mentioned, employers have an expectation that HRD professionals will deliver training that they develop using learning technologies within those educational materials. Employers also expect the HRD professionals to evaluate the learning impact; 19.8 per cent of all job postings evaluated included evaluation elements. Examination of the total per cent requirements of the other AOEs (Table III, Other AOE Total column) revealed an employer requirement for management of the learning management system (29.8 per cent) and adult learning (27.7 per cent). Employers expect less knowledge management and management of learning programs and more of direct interaction with the learner and the learning materials. Strategic planning and systems thinking are expected to help focus the training and delivery; 15.3 per cent of the job

<table>
<thead>
<tr>
<th>ASTD 2004 competencies</th>
<th>Knowledge (%)</th>
<th>Responsibility (%)</th>
<th>Other AOE Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Learning</td>
<td>23.3</td>
<td>4.4</td>
<td>27.7</td>
</tr>
<tr>
<td>LMS</td>
<td>14.8</td>
<td>15.0</td>
<td>29.8</td>
</tr>
<tr>
<td>Organization development</td>
<td>4.8</td>
<td>2.8</td>
<td>7.6</td>
</tr>
<tr>
<td>Strategic planning/systems thinking</td>
<td>3.9</td>
<td>11.3</td>
<td>15.3</td>
</tr>
<tr>
<td>ADDIE</td>
<td>4.8</td>
<td>1.5</td>
<td>6.3</td>
</tr>
<tr>
<td>Leadership</td>
<td>2.4</td>
<td>0.2</td>
<td>2.6</td>
</tr>
</tbody>
</table>

Note: \( n = 459 \)

Table III. Percentage of requirements by knowledge and responsibility elements of other AOEs

Figure 1. Percentage of knowledge for 2013 ASTD AOE by academic requirement compared to the total

Note: Some of the values for PhD-required education responsibility codes were zero (0 per cent)
postings evaluated. An example of employer expectation communicated within a job posting with these requirements:

Knowledge and understanding of adult learning principles and styles, and of a wide range of training methods, techniques, and formats. Knowledge of organizational and curriculum development principles and processes, methods, and techniques. Knowledge of computerized information systems used in human resources applications, including Learning Management Systems. Knowledge of Microsoft Office including Visio. Knowledge of web-based training programs and familiarity with web tools, and course authoring software (excerpt from posting #389).

The representativeness of the knowledge and responsibilities in recent HRD-related job descriptions of the 2013 ASTD Competency Model framework AoEs is limited. Tables II and III depict the frequency of the AOE knowledge and responsibilities within
the job postings evaluated. Although the 2013 AOE model does not specify the level for the ten AOE, there is an expectation that the elements would be relatively evenly distributed in requirements or be required in nearly all of the job postings. The highest percentage is 55.1 per cent of the job postings require knowledge or responsibility for training delivery. The lowest percentage is 3.3 per cent of the job postings examined indicated a requirement for the knowledge of (0.9 per cent) or responsibility for (2.4 per cent) knowledge management. A representative example of a job posting that delineated knowledge and responsibilities:

Ability to assess skills, coach, teach, and provide employees from all levels of the organization with constructive feedback. Ability to deliver effective presentations to individuals and large groups. Strong working knowledge of technology programs and platforms used to deliver training. Leadership of in-house trainers and consultation of outsourced trainers as needed. Flexible availability to meet the needs of 24/7 operation, 5 days per week. Familiarity with employee development approaches such as 360 performance plans and work style assessments. Excellent verbal and written communication skills. Excellent administrative and organizational skills (excerpt from posting #453).

An interesting observation of the knowledge and responsibilities expected within the AOEs is that three of the other AOE that were coded exceed the frequency of six of the 2013 ASTD AOE within the postings. This adds to the question of the adequacy of the 2013 ASTD model to represent employer needs. As determined by this research and in answer of 

RQ2, the knowledge and responsibilities indicated within the job postings do not represent the 2013 ASTD model.

RQ3 explores the training related knowledge and responsibilities that employers specifically expect from HRD professionals. Based upon this research, academic and professional development training programs would be expected to prepare HRD professionals to primarily have knowledge related to instructional design (25.9 per cent of postings evaluated), training delivery (25.5 per cent), learning technologies (19.2 per cent), adult learning (23.3 per cent), and learning management systems (14.8 per cent). To train HRD professionals for responsibilities, learners would need to have experience in applications related to training delivery (29.6 per cent), instructional design (22.4 per cent) and learning management systems (15.0 per cent).
In addition, the level of educational preparation required or preferred by the employers were most often the completion of a bachelor’s degree or a master’s degree. An example degree requirement, “Bachelor’s Degree required, Master’s Degree in technology or teaching preferred” (excerpt from job posting 429), would have been coded as master’s degree preferred and included within the master’s degree category in the figures. Figures 1-4 depict the percentage of the knowledge and responsibility requirements of the 2013 ASTD AOE and the other AOE by bachelor’s, master’s and doctoral levels compared to the total percentage. Very few of the job postings included a requirement for a doctoral degree. However, for those that did indicate a requirement, the knowledge levels indicated would be expected at a theoretical level that was not indicated equally within the responsibility requirements. An example educational requirement for a doctoral degree, “PhD or other doctoral degree preferred with a focus in learning science, cognitive science, educational psychology, educational technology, instructional systems design, or related field” (excerpt from job posting #447).

Discussion and implications
Online recruiting, the process of identifying and attracting potential employees through the Internet is the fastest growing recruitment medium in the twenty-first century. In fields that cut across industries such as HRD, posting job advertisements online through one or many sites enables organizations to reach a wider range of potential employees across geographic locations, industries and access points. Content analysis of the HRD job postings helped increase understanding of the knowledge, skills and responsibility expectations of employers in the HRD field.

Of the ten knowledge areas or AOE identified in the 2013 ASTD Competency Framework, Instructional Design (ID) and Training Delivery (TD) are the most frequently asked for. Even though HRD as a field has attempted to move away from training towards a more strategic human resource development role, employers still seem to consider training and learning to be a predominant area of focus within HRD. Academic preparation of HRD professionals therefore, needs to take into consideration the importance employers place on ID and Training delivery. On the contrary, knowledge areas such as knowledge management (KM), which figure prominently in academic research, do not seem to be an area of significant importance or need to the employers. Although there were 383 articles on KM published in the four AHRD journals until 2017, KM figured in just 3.3 per cent of job descriptions as a knowledge area or a responsibility. With regard to KM, employers perceptions and needs not reflecting the advances in academic research indicates that practice in the field lags far behind research and that academic research does not reflect the practical needs on the ground. Likewise, knowledge areas such as organizational development (OD) and adult learning, which were part of the 2004 ASTD competency framework, but were left out of the 2013 version continue to figure in employer expectations. OD garnered a lot of attention within HRD literature in the 1980s and 1990s, however, it did not figure prominently in HRD literature or professional frameworks within the USA in the past decade. This suggests that even though professional organizations and academicians in the twenty-first century envisage a larger strategic role for HRD professionals and HRD as a field, organizations and employers are yet to embrace this evolving vision of HRD.

Our findings indicate that HRD professionals primarily may need to develop superior expertise in the fields of instructional design, training delivery, learning technologies and evaluating learning impact, the four most frequent knowledge and responsibility terms coded in the job postings analyzed in this study. This implies the need for academic curriculum to provide knowledge and skills in these areas for potential HRD practitioners to be able to find jobs in the field and also address the needs of the employers. Our findings also
indicate that employers require HRD professionals to demonstrate knowledge in a broad range of areas, but expect them to be able to apply the knowledge practically in certain specific areas. For instance, areas like adult learning figure more in knowledge requirements than in responsibilities, indicating that employers want their HRD employees to possess a strong grasp of adult learning, which forms the foundation for any organizational training. On the other hand, areas such as performance improvement, managing learning programs and training delivery appear more under the category of responsibilities and less under knowledge requirements. This could suggest that these are areas where the ability to apply knowledge is more pertinent to the employers than just possessing knowledge in these areas.

Educational programs featuring Learning and Development and HRD orientations can use these research outcomes to specify the knowledge and skills necessary to include within their curricula. The findings from this study indicate that core courses that include instructional design, facilitation, presentation, educational technology integration and program evaluation would prepare students for the primary and most frequently required knowledge and skills in the HRD field. The findings can inform educational programs that prepare HRD professionals as they reference these results when selecting course and project directions.

It will be valuable to HRD professionals if further studies examine differences if any, in AoEs required within specific industries. That is, it may be useful to understand if there are industry specific technical skills or AoE expected of HRD professionals or if the expectations are more or less uniform across different industries. A collection of job postings from other online sites would also be valuable for comparison of the requirements and AoEs listed within the job postings. In addition, the study could be extended to other countries, using other HRD-related frameworks that are consistent and relevant within other country contexts.

**Contribution to the field**

In the past decade, academic research within HRD did not lead the investigation of knowledge and skills requirements of the field. Alignment between competency frameworks put forth by professional organizations and actual needs of the employers as expressed in the knowledge and skills they ask for in job postings have also not been tested in the last decade. From a research perspective, this study addresses this specific gap in HRD literature and contributes to understanding the needs of the employers. Using a bottoms-up approach, the study examined employer requirements or the demand side of the equation. From an academic or supply perspective, the study contributes a baseline analysis to keep track of employer needs, and the evolution of their needs or lack of it thereof, within the field, and discussed academic and workforce implications. This study offers insights that could inform academic preparation of HRD professionals that is aligned with industry needs. More importantly, the study also throws light on areas of apparent disconnect between academic and employer priorities in areas such as knowledge management. In highlighting research that is ahead of field requirements, this study attempts to remind the academicians of their twofold responsibility: to educate the field and lead it forward; and, at the same time, not to lose sight of the reality of the field.

From a methodological perspective, the study adopts content analysis of job postings, an approach not frequently used within HRD. Moreover, this study also uses online HRD job postings as the data source, to investigate employer intent, an approach not used within HRD literature so far. In doing so, the study extends the content analysis research methodology to examine a data source hitherto unexplored within HRD. Next, the study re-contextualizes competency requirements of the HRD field away from the desires or vision of the employers or academicians and grounds the competencies within the stated and published requirements of the employers. In doing so, the study itself and the findings offer a reality check of the direction of HRD research and academic preparation. The study also contributes to confirming and
expanding the most recent professional framework. The finding that all AoEs that are part of the 2013 ASTD model are represented in at least 1 per cent of job postings confirms the relevance of all knowledge or expertise areas in the model. Most importantly, the study underscored the variance in importance across these competencies that are not reflected in the model. While all AoE as presented as equal in the model, the study demonstrated that employers considered some knowledge or expertise areas more important than others. The visible and significant gradation of importance across knowledge areas evident in the analysis challenges the framing of the AoEs in the model and indicates the need for the model to be more reflective of actual competency requirements in the field.

Finally, the study extends the scope of HRD research by highlighting a path for future research that is responsive to practical needs of the field in different contexts. The findings presented in the study are based on a data set situated within the USA and a framework of one professional organization strongly encourage the need for further studies that expand our understanding of the supply side of HRD competencies. For example, longitudinal studies of job postings collected over time are required to capture the evolution of competency requirements. In addition, studying competencies from the supply side across markets and industries using other frameworks will provide a more thorough and comprehensive understanding of the needs and the evolution of the needs in different contexts.

Conclusions
Although the 2013 ASTD competency model framework does not indicate levels of importance, the analysis of the job postings served as a means to evaluate the competencies most desired and required within the organizations seeking HRD-related staff members between July 2015 and May 2017. These explicit inclusions inform academic programs and HRD scholar-practitioners of the relative knowledge and responsibilities to reinforce and practice within their curricula at academic institutions and within industry.

A limitation within this study is the source of the job postings. The ATD online job site was searched for relevant positions. Because many people within ATD are L&D practitioners, the education level of the postings might have been restricted more to the bachelor and master’s degree requirements. A different online resource might yield different results and more doctoral level education requirements. A second limitation is the length and word choices of the job postings. It is possible that word limits restricted inclusion of key knowledge or responsibilities in favor of others. It is not possible to know the details of the choices made when each of the job postings were written. A follow-up study to interview members of organizations who have posted the job advertisements would be informative to better understand how hiring managers communicate the AoEs and make decisions of what to include within the job posting.

The results of this study reinforce the necessity to examine employer expectations from time to time as a means to determine the current and near-term knowledge and skills needed within organizations to address HRD activities and projects.

References


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Further reading

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Talent management in higher education: is turnover relevant?

Rob Gandy and Patricia Harrison
Liverpool Business School, Liverpool John Moores University, Liverpool, UK, and
Jeff Gold
York Business School, York St John University, York, UK

Abstract

Purpose – Institution-wide staff turnover in universities might be considered “satisfactory”, but can mask wide counterbalancing patterns between departments and different staff. This paper aims to explore the benefits of detailed turnover analysis in managing talent in the complex changing landscape of Higher Education in the UK.

Design/methodology/approach – Staff turnover was analysed for both new recruits and staff leaving, as well as net turnover. The inverted Nomogramma di Gandy highlighted overall patterns and outliers. Staff characteristics examined included age, gender, staff type and contractual status.

Findings – There were (wide) variations in staff turnover for age, gender and type of contract, with particularly high turnover for research staff (influenced by the use of fixed-term contracts). This disproportionately affected younger staff, who are more likely than their elders to seek employment elsewhere, but might stay if there are career opportunities and development. Practical processes are suggested to improve intelligence that enables the best talent to be identified and retained, support a life-span perspective and inform emerging issues such as gender pay differentials.

Originality/value – Given the increasing complexity of managing talent in universities, with their predominantly knowledge-type employees, the research serves to highlight that high localized staff turnover can adversely impact on a university’s research capacity, which in turn presents risks to the achievement of its strategic aims and objectives. Therefore, detailed scrutiny of staff turnover dynamics can pinpoint where recruitment and retention policies and practice require focus.

Keywords Talent management, Generation Y, Higher education, Fixed-term contracts, Inverted Nomogramma di Gandy, Staff turnover

Paper type Research paper

Introduction

In the context of Higher Education (HE), universities are increasingly competing in a global market, and adopting management styles and approaches from the private and industrial sectors (National Audit Office, 2017). This is reflected in competition for academic staff with strong research skills (Weale, 2017) and the application of performance indicators, such as number of PhD-educated academic staff (Breakwell and Tytherleigh, 2010). Moreover, academic staff are knowledge workers (Arthur et al., 2017) with high international mobility (Bauder, 2015) and a group with distinctive characteristics (Beigi et al., 2018). Given this evolving climate and unique resource, universities must manage their talent positively and proactively and avoid wasting talent (Blackmore, 2014).
A key measure relevant to talent, for HE-sector and other organizations is staff turnover (Allen et al., 2010). This provides valuable insights to what is happening within the talent pool, generally retrospectively (Veleso et al., 2014). Within the UK, universities benchmark staff turnover on a university-wide basis, using several different professional, private and public organizations; although it is only one of many human resources management (HRM)-related topics covered. The risk is that institution-wide figures for universities mask wide variations between faculties and departments, and between staff categories (Gandy et al., 2018), which should be recognized and the associated talent issues addressed. Therefore, research was undertaken in a large post-1992 UK HE institution (Armstrong, 2008), with over 2,000 staff, five academic faculties and three support/managerial divisions, to establish the degree to which institution-wide staff turnover can mask wide internal variations. This found some wide variations, which would otherwise have gone unrecognized.

The aim of this paper is to explore the benefits of detailed turnover analysis in managing talent in the complex changing landscape of HE in the UK. We have limited knowledge about the use of detailed turnover analysis with academics in HE. We need to use HR systems more systematically owing to this unique resource, internationally mobile knowledge-workers, to better inform theory building and practice. The next section reviews current critical literature relating to talent, turnover and context (age and contract). The discussion section evaluates the potential implications and makes suggestions for improving the management of talent in the sector.

Talent and turnover
Talent retention is considered a principal HRM challenge, essential to meeting business needs (Suresh, 2014). A range of characteristics, such as natural ability, skills, knowledge and intelligence, are commonly used in the literature (Festing and Schäfer, 2014), with many context specific. However, there seems to be no agreed definition of ‘talent’ (Veleso et al., 2014), and consequently the term is used in a variety of ways for a variety of purposes (Ulrich, 2011). For example, some see HRM practitioners repackage their practices to find credibility (Chuai et al., 2008). Other uses differentiate between staff who are high performing and have high potential (Guthridge et al., 2006) or, more openly, allow a route to high performance and career development for everyone (Lewis and Heckman, 2006). Gallardo-Gallardo et al. (2013, p. 293) considered the various meanings for talent and made two distinctions – “talent-as-object” and “talent-as-subject”. For the former, talent is conceptualized as measures of ability, mastery of practice and commitment which relate to context. In HE, for example, research is increasingly evaluated using bibliometrics based on publications in approved journals (Gingras, 2016). This has resulted in a burgeoning of performance indicators in HE, such as H-index and citation indices, which can be used to decide who represents “academic talent”. The second meaning, “talent-as-subject”, focuses more on people’s skills and abilities, allowing potential segmentation of staff based on ranking terms of performance and/or capability. In HE, the identification of who is talented may rest with “elites who provide the basis for recognition” (Van den Brink et al., 2013). Further, in HE, there is growing evidence of segmentation between staff as “research academics” and staff as “teaching academics”. The latter can face confusion about their roles, lower status and uncertainty with career paths and promotions (Bennett et al., 2017).

Paradoxically, this inconsistency of meanings and uses for “talent” could be advantageous because it offers HRM professionals freedom to create individual talent management practices (Meyers and Van Woerkom, 2014). The ability to adapt the concept of talent is very relevant to HRM professionals in HE, as they increasingly have to behave like their private business sector counterparts, who believe companies can gain competitive advantage through “talents”
because people are unique and cannot be replicated by others. This is directly relevant to the employment of academics, who are not only deemed knowledge-type employees who are, frequently, internationally mobile (Maree, 2017), with particular esoteric knowledge and an individual, human focus which can be difficult to replace, particularly in science, technology, engineering and mathematics (Cardy and Lengnick-Hall, 2011; Teichler and Cummings, 2015). Furthermore, UK HE academic staff are more weighted towards the older groups, with 21 per cent aged 55 years and over, and only 25 per cent aged under 35 years in 2008/09 (HESA, 2010). For example, Generation Y or “Millennials”, born between 1977 and 1994 (Schroer, 2015), make up 50 per cent of the worldwide talent, increasing to approximately 75 per cent by 2025 (Deloitte, 2014). Therefore, in HE, as a location for knowledge-workers, a “smart” version of talent might be used to retain staff (Whelan and Carcary, 2011).

In light of the above, labour market intelligence is essential where skills shortages are escalating (Chartered Institute of Personnel and Development, 2015a; HAYS, 2017); talented people are needed to ensure businesses run efficiently, remain competitive and meet strategic goals (Hancock et al., 2013). Therefore, knowing who is staying and leaving is critical (Cardy and Lengnick-Hall, 2011) because it can be very costly and not easy to recruit and train new talent (Groysberg, 2010; Collings, 2015). Chartered Institute of Personnel and Development (2015a, p. 27) reported considerable variance in recruitment organizations’ costs and in respect of academic recruitment, the data from the USA estimated recruitment and associated costs of universities replacing faculty members varied between $300,000 and $700,000 (Ehrenberg et al., 2006) and $113,000 to $926,000 (Schloss et al., 2009).

To understand talent retention the most commonly-used statistical measure is labour turnover (Gates, 2004). Nevertheless, there can be “scant attention given to turnover” (Lawrence et al., 2013, p. 513), despite the fact that research exists about factors influencing people to leave their jobs (Cardy and Lengnick-Hall, 2011), and factors influencing people to remain with a company (Cotton and Tuttle, 1986). This lack of attention is possibly because the concept of turnover is taken for granted as it involves comparatively straightforward formulae with many published, high-level benchmark analyses. In HE, fair promotion and higher salaries are important to employee satisfaction (Chen et al., 2006), and relevant to the acquisition and retention of key skills, particularly where recruitment difficulties exist, such as specialist areas (Chartered Institute of Personnel and Development, 2015a).

Higher education academic context and turnover

This section will outline the key influencers for the UK HE academic recruitment landscape, namely, UK context, employment contracts, research and age diversity. “Brexodus” is a term used in relation to the turnover of academics from UK universities to Europe with reports of academic skills shortages as a result (Weale, 2017). One unique feature of the UK is the Research Excellence Framework (2015) which is used to assess the quality of research in HE institutions and appears to be driving not only an agenda of accountability but also the use of temporary contracts, a topic that is discussed below (Jump, 2013). A review of the Research Excellence Framework (REF) process (Department for Business, Energy and Industrial Strategy, 2016) criticized “gaming” (whereby a publication belonged and, therefore, moved with a researcher) as not being conducive to talent development; this issue will be addressed in the REF 2020 (Ref2020 Consulting, 2015).

In addition, there are specific HE talent retention challenges in respect of research and the use of fixed-term contracts. Research funding sources can encourage, or necessitate, the use of fixed-term contracts, their very nature influencing talent retention, often in younger staff (Festing and Schäfer, 2014) and a practice that is increasing (University College Union, 2017). Therefore, HR and HE managers must recognize localized high staff turnover, so that
they can understand and appreciate specific talent hotspots and evaluate whether HRM practices are suitable to ensure appropriate staff retention (Renaud et al., 2015). Furthermore, in terms of talent, management studies continually point to the lower levels of organizational commitment of temporary workers (Han et al., 2009). Moreover, feelings of job insecurity can cause a negative effect (Piccoli et al., 2016; Precarious staff at the University of Kent, 2018) including anxiety for young researchers in HE (Anonymous academic, 2018; Locke, 2014). A further issue with the use of fixed-term (temporary) contracts is the lower levels of training (Booth et al., 2002).

Other internal pressures include age as, since April 2011, in the UK, employers cannot issue retirement notices to employees (Age UK, 2015). The potential for older staff in HE to continue in employment beyond the traditional retirement ages presents a very different scenario because turnover may reduce if staff opt to continue in post. Chartered Institute of Personnel and Development (2015b) suggests more benefits than disadvantages to employing older workers, but there is the challenge that employees aged over 65 years could, potentially, remain working indefinitely, thereby creating a redundancy entitlement situation, which organizations may need to budget for. Traditionally, older men in the university have been employed mainly full-time and older women mainly part-time, but this may evolve differently in the future as older workers desire flexible working practices that create work/life balance. Despite the change in law regarding retirement, however, it would appear that most HRM systems are geared to employees aged 15 to 55 years; therefore, Hertel et al. (2013) recommend that HRM policies should adopt a life-span perspective. It is important that HRM systems are geared to the breadth of ages from young to older employees to ensure that a diversity of talent is retained and developed, according to their particular need.

Contribution of this research
Lawrence et al. (2013) share how, despite labour turnover being the most common data collected, with the exception of institution-wide rates, the detail is largely ignored. Our findings illustrate how institution-wide rates can mask internal variations. We argue that the lack of attention is particularly problematic where academics have longstanding careers and high employment-mobility (Wilson, 2017; Maree, 2017). It is also important at a time where there may be skills shortages in some academic areas (Dodgson, 2018). We illustrate these issues from research in one large post-1992 HE Institution (Armstrong, 2008) in the UK. The research also identifies variations between different gender and age groups and then highlights potential implications for talent management in light of the evolving age-diversity of the sector.

Methods
Sample
Data from the university in question covered all 2,510 staff employed during the period 1st August 2012 to 31st July 2013. This was the full academic year prior to the REF and was chosen in part because of suspicions that some universities recruited staff with good records of recent publications, thereby increasing their REF score, and consequently, their allocation of related resources. Whilst the main focus was academic and research staff, many issues equally apply to non-academic staff and so all staff were included.

Data
The anonymous staffing data collected were: anonymous identifier; age; gender; start date; leaving date; reason for leaving; disability status; ethnic origin; nationality; grade name; job name; department; location; full time equivalent (FTE); employment category; and nature of fixed term. The categories assigned to each data reflected the actual data available on the
university database. For “Job Name” these were “Academic”; “Administrative”; “KTP Associate”; “Manual”; “Research”; and “Technical”. “Academic” covered staff holding academic contracts; most having both teaching and research responsibilities. “Research” covered (academic) staff specifically employed on research contracts.

Ages were aggregated into 10-year groups for analytical purposes, with “Under 20 years” and “60 years and over” at either end of the range. There were separate analyses for Generation Y based on staff aged “35 years and under”. Nearly all staff had some type of permanent or fixed-term contract. For analytical purposes, all types mentioning “permanent” were aggregated together and all types mentioning “fixed-term” were aggregated together. The remaining category was Joint Contract.

**Measurement of turnover**

Staff turnover rate is a straightforward measure defined as the number of employees who leave a company during a specified period divided by the average total number of employees over that same period (Department for Work and Pensions and ACAS, 2014). The data required are simple and should be available within any organization. The (minimum) data required are:

- S – Number of staff at start of period;
- L – Number of staff lost/leaving during period;
- N – Number of new staff starting during period; and
- F – Number of staff at finish of period.

The turnover rate relating to lost staff is calculated as follows:

\[
\text{Lost Staff as Percentage of Average Numbers} = \frac{2L}{S + F} \times 100
\]  

(1)

The corresponding turnover rate for recruited staff is:

\[
\text{New Staff as Percentage of Average Numbers} = \frac{2N}{S + F} \times 100
\]  

(2)

Therefore:

\[
\text{the net turnover rate calculation is: } \frac{2x(N - L)}{(S + F)} \times 100
\]  

(3)

Some staff started and left university employment during the period covered; these were counted against both “lost staff” and “new staff”. To understand the full picture all staff were included, irrespective of whether they left for “voluntary” reasons, or other reasons such as redundancy. Specific exclusions were casual staff, management consultants and similar.

It is essential to note that the measurement of staff turnover varies between UK universities according to the benchmarking agency used. For example, some include and some exclude staff leaving at the end of a fixed-term contract (Gandy et al., 2018). This prompted the comprehensive approach adopted in this research, as the inclusion/exclusion of fixed-term contract staff will obviously influence results.

“Percentage Stability Index” is a commonly used HRM measure which describes the retention of experienced employees, calculated as the number of workers with one year’s service (or more), divided by number of workers employed one year ago, multiplied by ten (Department for Work and Pensions and ACAS, 2014).
Constraints with the analyses were: they involve “headcounts” of individual university employees, rather than the FTEs; and the “average number of staff” was taken as the mean of the number of staff at the start and end of the period, namely, \((S + F)/2\), which is a commonly used calculation.

**Presentation of turnover rates**

The scattergram-related inverted Nomogramma di Gandy (NdiG) was used to demonstrate variations in staff turnover and highlight outliers. It requires minimum data, and by showing many data in one diagram, it acts as an exploratory data analysis tool for considering methodological issues. The emphasis is on ‘insightful questioning’ and the skill of asking new questions (Gandy, 2009).

The inverted NdiG’s x-axis is “Lost Staff as Percentage of Average Numbers”, (1) above, and the y-axis is “New Staff as Percentage of Average Numbers”, (2) above. Therefore, an organization might be considered “self-sufficient” or “self-contained” if there is no gain or loss of staff. In such circumstances, the inverted NdiG values would be \((0, 0)\). Hence, the further away from this point, the greater the turnover. Organizations with expanding staff appear above the 45° diagonal, whilst those contracting appear below. Data were collated into meaningful categories: “Staff at 1st August 2012”; “Leavers”; “New Staff”; and “Staff at 31st July 2013”.

**Results**

Table I sets out the above data and indices for age, gender, type of contract and type of staff, and should be looked at in conjunction with the related patterns in Figure 1.

Total staff decreased from 2,346 to 2,277, with an increase of 1.2 per cent academic staff enabled by reductions in administration and research. Staff reduced in all but two age-sex groups, with the overall reduction of 3 per cent being the net effect of 10 per cent staff leaving and 7 per cent starting. That turnover was greater in younger age groups (particularly the 20-29 years group) was no surprise, but concentrating on net turnover figures can be misleading; despite limited differences in net turnover between Generation Y and older staff, this masked major differences between their graphical indicator values, with Generation Y being outliers for both males and females.

Mean ages for most groups were broadly similar, but there were gender differences for research staff (41 years for males and 35 years for females) and staff aged 60 years and over, where males accounted for 76 (61 per cent) of the 124 full-time staff, while females accounted for 64 (65 per cent) of the 98 part-time staff.

The fact that academic staff mainly have permanent contracts and many research staff have fixed-term contracts (where by definition staff normally leave at their contract end) was reflected by marked differences in their respective figures. Research staff with fixed-term contracts numbered 90 at the beginning of the year and 67 at the end. Yet although they were only 3.8 per cent of the total staff at the beginning of the year, they accounted for 18.5 per cent of the staff leaving and 12.2 per cent of the staff starting. There was very high turnover for part-time research staff on fixed-term contracts, with a net turnover of \(-74.3\); they accounted for 29.7 per cent of part-time staff that left and 13.0 per cent of such staff that started. Closer inspection found five academic departments (three in Science and two in Technology) with high figures for each of: taking on new staff (indicator Y) (ranging 12.5-23.1); percentage of staff with fixed-term contracts (ranging 20.8-43.6 per cent); and percentage of research staff (ranging 11.7-44.4 per cent). This relationship between fixed-term contracts and research jobs appears to be a growing tendency (Metcalf *et al.*, 2005).

Consequently, the above results serve to highlight where management should focus attention in respect of staff retention and talent management, something that will not
<table>
<thead>
<tr>
<th>University grand total</th>
<th>Staff at 1 Aug 2012</th>
<th>Leavers*</th>
<th>New staff*</th>
<th>Staff at 31 July 2013</th>
<th>% Distribution**</th>
<th>X</th>
<th>Y</th>
<th>Net turnover</th>
<th>Stability index (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>2346</td>
<td>233</td>
<td>164</td>
<td>2277</td>
<td>100.0</td>
<td>10.1</td>
<td>7.1</td>
<td>−3.0</td>
<td>91.0</td>
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<tr>
<td><strong>Age and gender</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Under 20 yrs</td>
<td>Males 0</td>
<td>0</td>
<td>6</td>
<td>6</td>
<td>0.3</td>
<td>0.0</td>
<td>200.0</td>
<td>200.0</td>
<td>−</td>
</tr>
<tr>
<td>Under 20 yrs</td>
<td>Females 0</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>0.2</td>
<td>0.0</td>
<td>200.0</td>
<td>200.0</td>
<td>−</td>
</tr>
<tr>
<td>20-29 yrs</td>
<td>Males 56</td>
<td>16</td>
<td>23</td>
<td>63</td>
<td>2.8</td>
<td>26.9</td>
<td>38.7</td>
<td>11.8</td>
<td>78.6</td>
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<tr>
<td>20-29 yrs</td>
<td>Females 87</td>
<td>28</td>
<td>23</td>
<td>82</td>
<td>3.6</td>
<td>33.1</td>
<td>27.2</td>
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<td>77.0</td>
</tr>
<tr>
<td>30-39 yrs</td>
<td>Males 213</td>
<td>27</td>
<td>34</td>
<td>220</td>
<td>9.7</td>
<td>12.5</td>
<td>15.7</td>
<td>3.2</td>
<td>90.1</td>
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<tr>
<td>30-39 yrs</td>
<td>Females 294</td>
<td>48</td>
<td>22</td>
<td>268</td>
<td>11.8</td>
<td>17.1</td>
<td>7.8</td>
<td>−9.3</td>
<td>83.7</td>
</tr>
<tr>
<td>40-49 yrs</td>
<td>Males 350</td>
<td>22</td>
<td>18</td>
<td>346</td>
<td>15.2</td>
<td>6.3</td>
<td>5.2</td>
<td>−1.1</td>
<td>93.7</td>
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<tr>
<td>40-49 yrs</td>
<td>Females 409</td>
<td>21</td>
<td>15</td>
<td>403</td>
<td>17.7</td>
<td>5.2</td>
<td>3.7</td>
<td>−1.5</td>
<td>94.9</td>
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<tr>
<td>50-59 yrs</td>
<td>Males 324</td>
<td>13</td>
<td>6</td>
<td>316</td>
<td>13.9</td>
<td>4.1</td>
<td>1.6</td>
<td>−2.5</td>
<td>96.0</td>
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<tr>
<td>50-59 yrs</td>
<td>Females 359</td>
<td>18</td>
<td>9</td>
<td>347</td>
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<td>5.1</td>
<td>1.7</td>
<td>−3.4</td>
<td>95.8</td>
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<td>60 yrs and over</td>
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<td>110</td>
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<td>18.7</td>
<td>6.0</td>
<td>−12.8</td>
<td>83.2</td>
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<tr>
<td>60 yrs and over</td>
<td>Females 129</td>
<td>18</td>
<td>1</td>
<td>112</td>
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<td>14.9</td>
<td>0.8</td>
<td>−14.1</td>
<td>86.0</td>
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<tr>
<td><strong>Grand total</strong></td>
<td>Males 1068</td>
<td>100</td>
<td>93</td>
<td>1061</td>
<td>46.6</td>
<td>9.4</td>
<td>8.7</td>
<td>−0.7</td>
<td>91.7</td>
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<tr>
<td><strong>Grand total</strong></td>
<td>Females 1278</td>
<td>133</td>
<td>71</td>
<td>1216</td>
<td>53.4</td>
<td>10.7</td>
<td>5.7</td>
<td>−5.0</td>
<td>90.5</td>
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<tr>
<td><strong>Generation Y</strong></td>
<td>Males 182</td>
<td>33</td>
<td>45</td>
<td>194</td>
<td>8.5</td>
<td>17.6</td>
<td>23.9</td>
<td>6.4</td>
<td>85.2</td>
</tr>
<tr>
<td><strong>Generation Y</strong></td>
<td>Females 268</td>
<td>60</td>
<td>43</td>
<td>251</td>
<td>11.0</td>
<td>23.1</td>
<td>16.6</td>
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<tr>
<td>Non-generation Y</td>
<td>Males 886</td>
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<td>48</td>
<td>867</td>
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<td>7.6</td>
<td>5.5</td>
<td>−2.2</td>
<td>93.0</td>
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<tr>
<td>Non-generation Y</td>
<td>Females 1010</td>
<td>73</td>
<td>28</td>
<td>965</td>
<td>42.4</td>
<td>7.4</td>
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<td>−4.6</td>
<td>93.1</td>
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<td>Fixed contract</td>
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<td>101</td>
<td>70</td>
<td>193</td>
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<td>48.4</td>
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<td>Joint contract</td>
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<td>0</td>
<td>2</td>
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<td>0.0</td>
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<td>0.0</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Type of staff</strong></td>
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<td></td>
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<td></td>
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<tr>
<td>Academic</td>
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<td>70</td>
<td>81</td>
<td>897</td>
<td>39.4</td>
<td>7.9</td>
<td>9.1</td>
<td>1.2</td>
<td>92.7</td>
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<tr>
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<td>53</td>
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<td>38.6</td>
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<td>5.9</td>
<td>−4.1</td>
<td>91.3</td>
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<td>22</td>
<td>112</td>
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<td>40.3</td>
<td>17.4</td>
<td>−22.9</td>
<td>68.1</td>
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<td>Other staff</td>
<td>403</td>
<td>22</td>
<td>8</td>
<td>389</td>
<td>17.1</td>
<td>5.6</td>
<td>2.0</td>
<td>−3.5</td>
<td>94.5</td>
</tr>
</tbody>
</table>

**Notes:** *Includes new staff who also were leavers during year; **% distribution relates to staff at 31 July 2013*
necessarily be evident to those universities that measure staff turnover excluding fixed-term contract staff (Gandy et al., 2018).

Discussion
Hancock et al. (2013) highlighted both positive and negative consequences of high staff turnover, concluding that on balance the latter outweighed the former. Therefore understanding staff turnover is essential for any organization; but the lack of consistency in measuring staff turnover, between benchmarking agencies used by UK universities, militates against sector-wide comparisons (Gandy et al., 2018). This study segmented staff into a variety of categories and established varying turnover patterns across the university. In particular, turnover should be transparent and calculated for both new staff and leavers because these can vary considerably. The varying patterns for the age and gender, the apparent relationship between fixed-term contracts and research posts, and the different age distributions between the types of staff, all have implications for talent, particularly in light of the high turnover costs (in the USA) of $68m (Figueroa, 2015).

Challenges of an age and gender diverse talent Pool
The results presented different challenges at either end of the age spectrum, with highest staff turnover amongst younger staff and older staff increasingly staying on after retirement age; in this university 27 per cent of employees aged over 60 years were actually over 65, with the oldest being 73.

The number of women leaving exceeded men for both the 20-29 and 30-39 years age groups, although women were in the majority for both age groups. To assume and accept greater turnover in these age groups for females can be misleading: women report unique challenges (Figueroa, 2015) with some arguing that the environment of HE itself “militate(s) against gender equity” (Duberley and Cohen, 2010, p. 195). Thus, by assuming that wastage rates for females in certain age groups are inevitable can lead to structural issues later. For example, the gender pay reporting introduced to the UK in 2017 highlighted significant pay differences between genders for those undertaking same or similar work in some occupations (Office for National Statistics, 2018). In the context of this institution, we found
that gender pay is a particular issue with men’s median hourly rate being over 20 per cent more than women’s (GOV.UK, 2017). A subject for further research could be whether higher turnover for women means they do not progress up pay scales as far as men, thereby contributing to their average pay being lower. This organization, like others, has no additional information about the reason for the loss of 106 (45.5 per cent) staff, as these were recorded using a global term “resignation”. Employment exit interviews can be conducted to provide additional information; however the university covered by the research commissioned an independent exit survey of staff, but received insufficient responses to make it viable. It is recommended that internal processes are put in place to routinely collect exit data on all staff leaving; doing this just before they leave should yield a much better response than any post hoc survey. Metcalf et al. (2005) identified several categories of reasons why staff leave and their plans which can inform the development of such data.

**Fixed-term contracts, research and young people**

The research evidenced a relationship between staff having fixed-term contracts and research contracts, and also the taking on of new staff (indicator Y). This was relevant in respect of age because 32 per cent of staff with a fixed-term contract were from Generation Y (for both sexes), which compared to 17 per cent for permanent staff. For research staff 62 per cent of staff with a fixed-term contract were from Generation Y (for both sexes), which was much higher than the 13 per cent for academic staff (19 per cent for females and 10 per cent for males).

Five academic departments had high figures for each of the three related indicators. The inference is that these departments recruit (young) research staff on fixed-term contracts to support research projects that they have won/gained funding for, which are themselves for a fixed period. Inevitably, cycles of research project funding vary, and so these departments will recruit and shed research staff in line with project plans and funding availability; consequently, in any year, some projects will start, some will continue and some will finish, which will reflect in the staff turnover accordingly. Recent findings from South Africa point to the importance of management support for early career academics through talent management and development, and recognition that enhances organization commitment (Lesenyeho et al., 2018). The question for universities is how to make best advantage of this pool of talent? Simply letting them go at the end of their contract and project is probably less than optimal, and these staff will inevitably need to be applying for new jobs well in advance of their contract end-date. It is recommended that talent management processes should review research staff with fixed-term contracts, say, six-months ahead of the termination date, to determine whether to offer a permanent (or even another fixed-term) contract. This would need to take into account a whole range of relevant criteria, including personal potential; REF potential; research direction; organizational opportunity; and resource availability. If there are no apparent career and development opportunities, staff will start to look elsewhere. The implications for HE HRM resources of such an approach should not be underestimated and a balance may need to be struck with the numbers of such staff; in which case some prioritization process could be required, with relevant senior faculty managers recommending those for consideration, based on agreed set criteria. The findings from Locke (2014) that head-hunters check university league tables, such as the Complete University Guide (2017), before recruiting senior academics could be more problematic for post-1992 institutions which traditionally have lower rankings than their Russell Group (2017) counterparts. A university’s position in the HE market is something that those managing talent will need to be aware of and take into account when making their plans.

In terms of this study, the movement of talent tended to be approximately two years before the REF date, and accordingly, the main movement period for talent for the 2014 REF was in 2012/13 (i.e. the period covered by this study).
Monitoring talent management

There is a need for HRM functions to evaluate turnover as highlighted by Hesketh (2014). He found that the necessary systems were “largely absent”; something subsequently endorsed by Chartered Institute of Personnel and Development (2015c) which stressed the related challenges involved, as HRM is expected to become more business focussed. This study suggests that to operate successfully, universities must be focussed and flexible in their talent management and recruitment to support the different age groups. For example, all staff from age 60 should be proactively engaged to review their work-life balance and intentions. This should involve positive support so that their future contributions can be optimally managed; which could include cascading their valuable and possibly unique skills and knowledge to colleagues. There should also be greater attention on well-thought determinants for young talent retention, with talent management practices customized for each talent to aid their retention, as the same retention strategy cannot be applied for everybody anymore (Chartered Institute of Personnel and Development, 2015a).

The scrutiny of staff turnover, as one of several relevant indicators, is important in the monitoring of talent management. It has traditionally been reactive, and therefore a proactive approach must be adopted to underpin an organization’s talent management; so that strategically it can retain its best talent. There is a danger that “good” institution-wide benchmarked turnover figures can mean universities do not look at patterns below institution level, and thereby miss high localized turnover which could point to talent management and other issues. Therefore, staff turnover should be monitored at all levels.

In aggregate, a university’s talent management processes should ensure that the skills and talents of all staff are in line with its requirements. The varying and contrasting pressures described herein present university managers and HRM staff with major tests they must address both strategically and operationally. Ozcelik’s (2015) idea that organizations which are able to change their processes according to Generation Y needs will win “the war for talent”, seems realistic. However, against aggregation, is the way different subfields in HE may use different talent management practices, particularly in relation to the differences between “academic talent” and “teaching talent” (Van den Brink et al., 2013). The more formal articulation of these subfields in the UK HE sector increases the pressure on this complex environment. We recommend that talent management in HE be viewed as a strategic issue (Singh, 2014) directly relevant to organizational performance (Hazelkorn, 2015).

Conclusions

This study makes contributions to a commonly known, yet underused method that can help manage staff retention. This contribution is in the context of a group of workers with unique characteristics. First, as knowledge workers, learning takes longer to become embedded as they “tend to learn in an informal, self-directed manner” (Whelan and Carcary, 2011, p. 681) and their departure can have significant impact on the flow or (in some cases) removal of knowledge. Second, the group is particularly age-diverse and internationally mobile. Combining these characteristics, we suggest, makes this a particularly unique group and one where impactful monitoring could create a significant business effect.

Particular talent management challenges relate to research because funding sources can encourage the use of fixed-term contracts, and these should be addressed positively and pragmatically. We add to the research opportunities already proposed the exploration of the impact of fixed-term contracts on age and gender diversity in HE.

We share how institution-wide staff turnover rates can mask wide internal variations. While universities and organizations should benchmark against peers, if they wish to maximize their
talent management they should adopt a proactive approach to staff turnover and undertake segmented analyses of local data to understand internal and external dynamics. This will enable an informed view of whether their talent management arrangements meet their strategic aims and objectives and support the retention and recruitment of the best talent. We encourage future researchers to explore and create practical labour turnover tools for HR functions so that they can identify the reasons for labour turnover.

HR functions in HE must recognize the distinctiveness of the different life stages of academic and research staff, who are predominantly knowledge-type employees, and adapt policies and procedures so as not to lose such important esoteric knowledge. This is very important because HE is an increasingly complex sector for talent management, with its age-diversity, recruitment and retention dynamics.

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Differentiating knowledge transfer and technology transfer

What should an organizational manager need to know?

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Abstract

Purpose – The purpose of this paper is to examine the conceptualization of knowledge transfer and technology transfer to seek answers to the question: Why should an organizational manager need to know the difference between knowledge transfer (KT) and technology transfer (TT)?

Design/methodology/approach – An extensive literature review method was used to identify and analyze relevant international publications. The literature sources are categorized as follows: literature on KT only, literature on TT only and literature on comparative analysis on KT and TT. The conceptualization of KT and TT is based on signaling theory.

Findings – The authors identified differences between KT and TT based on six dimensions, namely knowledge versus technology characteristics, usage of KT and TT in national development, sender versus receiver, intra-firm versus inter-firm transfer, foreign direct investment (FDI) and workers’ mobility.

Research limitations/implications – This is a conceptual analysis that should contribute to the existing literature by comprehensively reviewing the processes of KT and TT based on selected research conducted worldwide as well as suggest practical guidelines to organizational managers in managing KT and TT.

Originality/value – This review could shed new insights for future researchers to validate and examine the identified differences between KT and TT so that managers could make use of the findings to manage KT and TT successfully in their organizations.

Keywords Knowledge transfer, Tacit knowledge, Signaling theory, Innovation, Technology transfer, Explicit knowledge

Paper type Conceptual paper

Introduction
The field of knowledge transfer (KT) and technology transfer (TT) is unique because of its multidisciplinary nature (Audretsch et al., 2016). KT and TT have been used in the fields of communication, rural and industrial development and management. Many scholars are in agreement with the view that KT and TT are among the ingredients in innovation (Wagner, 1994; Cohen and Levinthal, 2000; Schulz, 2003; Nezu, 2007; Ikeda and Marshall, 2016). Business institutions in the knowledge-driven environment are constantly affected by the pressure of competition and innovation in this globalized era, rendering KT and TT vital to the success of an enterprise.
Argote and Ingram (2000, p. 151) define KT as “the process through which one unit (e.g. group, department, or division) is affected by the experience of another”. It also refers to a dyadic exchange between individuals, groups or organizations, in which a recipient can understand, learn and apply knowledge transmitted from a source (Abdul Hamid and Salim, 2011; Ismail, 2015; Hill et al., 2016). Based on these definitions, we surmise that KT requires three important elements to make it possible:

1. factions involved, namely, informant and recipient;
2. knowledge to be transferred; and
3. the medium or context where the informant and recipient reside.

TT, on the other hand, is defined as the process of transferring or disseminating technology from its origin to a wider distribution, to more people and places. It occurs along various axes: among universities, from universities to businesses, from large businesses to smaller ones, from governments to businesses, across borders, both formally and informally and both openly and surreptitiously (Debackere et al., 2014; Osabutey and Jin, 2016). Often it occurs by planned effort to share skills, knowledge, tools, methods of manufacturing and facilities among governments or universities and other institutions to ensure that scientific and technological developments are accessible to a wider range of users who can then further develop and exploit the technology for new products, applications, services (Davenport, 2013).

Research gap
In view of the critical need for both KT and TT to take place, it is important to differentiate between the two concepts to avoid confusion and their inaccurate use in managing knowledge by organizations. However, studies on KT and TT are mostly focused separately on either KT (Hsu, 2012; Asmussen et al., 2013; Ismail et al., 2016; Wehn and Montalvo, 2018) or TT (Abdul Wahab et al., 2012; Gilging et al. 2011; Dubickisa and Gaile-Sarkanea, (2015). Sometimes the terms are even used interchangeably (Sadoi, 2011; Strach and Everett, 2006; Kidanemariam, 2014). However, there are not many studies that examine the differences between the two constructs.

Dagenais et al. (2016) used KT to examine the prevention of psychological and musculoskeletal problems among 911 emergency call center agents. Their findings indicated that the evaluation of KT programs was likely to have had a positive impact on the behavior of the call center personnel. This suggests that KT relates to the learning process in the organization. However, the study did not include the TT dimension of knowledge management in assessing the problems faced by the call center agents.

Davenport (2013) specifically examined KT and TT among professionals working at university offices in the UK, but the researcher did not include KT and TT in business organizations. Gopalakrishnan and Santoro’s (2004) study in the USA on industrial firms-universities collaboration provided comprehensive comparisons between KT and TT based on inter-organizational predictors using McKinsey’s 7S-framework (strategy, structure, systems, shared values, skills, style and staff). The study, however, was limited to only five organizational factors; it excluded skills and staff, two employee-related factors that were very close to the responsibilities of managers. The researchers also asserted that KT is more of an inclusive construct directed towards understanding the ‘why’ for change. In contrast, TT is a narrower and more targeted construct that usually embodies certain tools for changing the institutional and production environment. However, it is still unclear what
specifically differentiates the two constructs as the focus of their study was limited to the influence of organizational factors on KT and TT.

Gilbert and Cordey-Hayes’s (1996) framework analysis conceptualizes KT as a vehicle for technological change/innovation that relates to evidence of changed behaviors and attitudes (core routines of organization). The paper describes the application of knowledge (instrumental and developmental knowledge) in the KT process based on empirical data. However, there is no clear conceptualization of TT in the article. In addition, as KT and TT are multi-faceted concepts, studies on them are very much dependent on innovation theory (Davenport, 2013), communication and innovation theories (Wagner, 1994; Rogers, 2003); and knowledge-based view and organizational models (Daghfous, 2004; Abdul Wahab et al., 2012). We conclude, therefore, that there has been limited KT and TT research using signaling theory to support the analysis of these constructs. Hence, there is a substantial knowledge gap on what differentiates KT from TT.

The objective of this paper is to clarify the discussion on KT and TT by examining the differences between these two constructs with regard to their conceptualization and usage. We conducted a thorough search via online databases and search engines (e.g. EBSCO Publishing, ProQuest, Elsevier, Emerald, JSTOR and Wiley). Keywords such as knowledge transfer, technology transfer, tacit knowledge, explicit knowledge and innovation were used in literature search. The articles collected were on:

- KT or TT separately;
- the usage of KT and TT interchangeably; and
- on limited documents comparing KT and TT in relation to the dissemination of innovation, influence of organizational factors, employee mobility and development in general.

Finally, we used the content analysis technique of 78 articles to differentiate KT from TT, covering knowledge versus technology characteristics, their usage in the development stages of selected countries, the processes and practices of KT and TT involving the role of foreign direct investment (FDI) and workers’ mobility in domestic and international transfer.

This article looks at underlying assumptions associated with KT and TT in their general use that goes beyond their function as required resources, be they tangible or intangible, external to merely organizational boundary that affects transferability. Essentially, this article provides an insight for mapping guidelines to be deployed by managers involved in the transfer process. The use of signaling theory in the analysis further enriches the application of the theory in knowledge management. Specifically, it answers our research question:

**RQ1.** Why should an organizational manager need to know the differences between knowledge transfer and technology transfer?

The next section of this article continues with a discussion on signaling theory underpinning KT and TT and a comparison of the differences between KT and TT. We then present the recommendations for practice, future research and conclusion.

**Signaling theory**

We conceptualize KT and TT within the framework of signaling theory (Spence, 2002; Connelly et al., 2011) that examines communication between individuals or parties. Signaling theory is fundamentally concerned with reducing information asymmetry between two parties (Spence, 2002), the provider and receiver of knowledge. Typically, one
party, the sender, must choose whether and how to communicate (or signal) that information, and the other party, the receiver, must choose how to interpret the signal.

Management scholars have applied signaling theory to help explain the influence of information asymmetry in a wide array of research contexts including KT and TT. Information asymmetry refers to different levels of knowledge and technology accessed and possessed by two parties, and to have an equilibrium between the two, knowledge or technology needs to flow or transfer from the higher to the lower level party through the processes of KT and TT. Among the principles of asymmetric information are:

- Sender A knows her quality but Receiver B does not;
- A has an unobservable quality (very knowledgeable, for instance, in medical health or digital technology) which should be disseminated to others;
- A benefits from an interaction with B; and
- B benefits from an interaction with A, and in this case, the level of knowledge transferred is high.

Signals (the knowledge or technology) may be honest and purposeful, conveying information which enhances the competence of the receiver (Jeitschko et al., 2016).

Stiglitz (2000) highlights two broad types of information where asymmetry is particularly important, namely information about quality and information about intent. In the first case, information asymmetry is important when one party is not fully aware of the characteristics of another party. In the second case, information asymmetry also is important when one party is concerned about another party’s behavior or behavioral intentions.

**Differences between KT and TT**

In the following section, we discuss the differences between KT and TT based on general development and organizational contexts.

**Knowledge versus technology characteristics**

The characteristics of information (knowledge and technology) influence the firm’s KT and TT processes. Key characteristics of knowledge and technology include:

- transferability, whether the information is tacit or explicit, complex versus simple (Simonin, 1999);
- capacity for aggregation, whether the recipient of the information can add new knowledge to their existing knowledge (Cohen and Levinthal, 2000); and
- appropriability, whether the owner of the information is capable of receiving a return equal to the value created by the resource (Teece, 1977).

KT and TT seem to be similar in terms of the capacity for aggregation and appropriability. However, KT and TT differ in relation to transferability. Knowledge seems to be less transferable compared to technology as it is more tacit, inarticulable, amorphous, subjective and includes more elements of human judgment, thus making it less codifiable (Gopalakrishnan and Santoro, 2004). Knowledge is also more intangible, more theoretical and conceptual-based. Accordingly, the characteristics of tacit knowledge make it less sharable compared to technology. In contrast, technology is more explicit; most of the time, it is presented in the forms of tools and equipment, and thus, it is more measurable (Goffin and Koners, 2011; Davenport, 2013).
Another construct relevant to tacit knowledge is embrained knowledge, which is dependent on one’s conceptual skills and cognitive abilities. We could consider this to be practical, high-level knowledge, where objectives are met through perpetual recognition and revamping. Tacit knowledge may also be subconscious, but is action-oriented and comprises contextual practices. Acquired through socialization, it is about how individuals interact in and interpret their environment. An example of tacit knowledge is cultural intelligence (Ismail, 2015). On the other hand, explicit knowledge, also known as encoded knowledge, is conveyed via signs and symbols (e.g. books, manuals, databases, software) and decontextualized into codes of practice. In addition, for knowledge to be used, it must, in the first place, be presented in a way that is concise and simple to understand (Dagenais et al., 2016). Knowledge can be presented on paper and electronic formats (Sinden and MacDermid, 2014).

According to Barney et al. (2001), valuable technologies are often difficult to imitate or transfer. This is because of the substantial costs of technology transfer and also costs declining with the age of the technology. As indicated earlier, technologies are presented in the form of tools and inventions (defined as an idea and innovation turned into a viable product), and inventions are registered as intellectual property (IP) that are patented to avoid piracy and illegal duplication. The patent is aimed at protecting a particular type of invention, usually one that is used for a specific commercial purpose (Lemley and Feldman, 2016). Technology is, hence, geared towards practicality; it involves psychomotor skills and is trial-and-error oriented. Thus, we can say that both KT and TT have the capacity of aggregation, that is, adding and improvising new knowledge and technology, respectively. Also, KT and TT are both expected to have the appropriability in returns equal to the value created by the resource. However, they differ in terms of tacitness and explicitness of the knowledge they embody (Davenport, 2013; Günsel, 2015) that determine the nature of transferability.

Usage of KT and TT in national development
A brief historical usage of KT and TT in several countries is worth highlighting here to discern the differences between the two. This brief country analysis looks at the evolution of the constructs and their applications in specific countries over the years and highlights findings that are thought to be important for managers to know. It is believed that KT and TT are related to the country’s level of development as many scholars confirm that the two transfers have a strong impact on the country’s capacity to innovate (Davenport, 2013; Ikeda and Marshall, 2016). Japan is representative of developed countries, Malaysia and South Korea represent fast developing/industrializing nations, and Kazakhstan represents the emerging economies in the Central Asia.

KT and TT have been used interchangeably in Japan (Isobe et al., 1998; Sadoi, 2011). Japan was considered a prime mover in the emerging economic region (EER) markets of Asia after the Second World War (1939-1945). In the initial phases of development, much of the R&D undertaken in Japan was absorptive capacity, that is, Japanese firms were able to acquire, assimilate and exploit information regarding technological inventions and products. Hence, organizational managers aimed at integrating foreign technologies to achieve indigenous technological development.

The TT that took place from the West to Japan throughout the Meiji period could be categorized as follows:
- overseas factories founded through direct investment by suppliers;
- businesses established by migrants from the supplier country;
• joint ventures;
• management contracts with suppliers;
• turnkey contracts where suppliers guaranteed the transfer of technology when they constructed factories;
• employment of engineers and skilled workers provided by suppliers or by businesses owned by receivers;
• purchase contracts for machinery and know-how;
• TT as an integral part of the machinery imported by the recipient;
• patent license agreements;
• production of imitations or reverse engineering; and
• in-house development of a technology (Kidanemariam, 2014).

The countries from where the technologies came were Britain, the USA, France, Germany and The Netherlands.

In Japan, 'transfer of knowledge and technology' is an important topic, especially after the publication of the best-selling book by Nonaka and Takeuchi (1995) titled 'The Knowledge Creating Company'. This book looks at the success of Japanese firms achieved through employees creating and distributing especially tacit knowledge in and out of companies. Also, Japan capitalizes on the research tradition of 'monotsukuri' (or manufacturing). Fujimoto (2007) summarizes under monotsukuri all value-creating activities associated with the production of goods, including 'transfer and distribution' activities. In addition, Hirose and Hitomi (2016), for instance, describe the Mazda-way of building and distributing efficient motors which, in a way, implies the importance of 'transferring' specific knowledge and skills such as automotive technology to consumers on a wide scale. This brief scenario shows KT and TT have been interchangeably used in Japan, albeit with more emphasis on KT.

Before Malaysia embarked on industrialization in the 1970s, TT was used more widely than KT in the country. TT was especially applied in the agricultural sector to denote the flow of technology from the country’s research centers such as Rubber Research Institute of Malaysia (RRIM), Malaysian Agricultural Research and Development Institute (MARDI) and public universities such as the University of Agriculture (Mohd Yassin et al., 1984; Ismail, 1990). The major goal of TT then was for the development of commodities such as rubber, paddy, oil palm and other agricultural produce, where relevant technologies were disseminated through various agricultural development departments throughout the country. Similarly, at the international level, TT involved dissemination of technology and new innovation from research centers such as the International Rice Research Institute (IRRI) located in the Philippines that was mandated to transfer high yielding varieties of paddy and other paddy-related technologies to farmers in rice-producing countries worldwide.

In Korea, modern technology development and/or technology transfer began only in the early 1960s (Kidanemariam, 2014), about a century later than Japan. As in Japan, old industrial equipment and facilities from developed countries were imported to Korea on a turnkey basis through foreign aid or loan programs. In the early 1960s, Korea’s production technology was characterized by simple manufacturing with unskilled or semi-skilled labor. To achieve the goal of TT, Korea’s science and technology policy received strong government support and was adjusted to conform to national development goals and strategies. Today, Korea has become an exporter of technology in high-tech fields, such as electronics, information technology, communication and automotive goods.
Similarly, the concept of TT emerged and was used before KT in Kazakhstan, a central Asian country (Smirnova, 2014). TT was used in legislative documentation although its definition seemed to be blurred. The first detailed explanation of the concept and its importance might be attributed to scholars from the Institute of Economics of the Ministry of Education and Science of the Republic of Kazakhstan and in ‘Strategy Kazakhstan, from 2000 to 2030’ (Kenzheguzin et al., 2005; Smirnova, 2014).

The above discussion shows that TT was used much earlier and more intensively in the countries’ development as TT was considered as vehicle to innovation. The conceptualization of KT came later as it was assumed to be embodied within technology. In addition, KT became more sophisticated and differentiated from TT, with the notion of knowledge as being both tacit and explicit in nature as noted by Nonaka and Takeuchi (1995) and advanced by other scholars such as Gofﬁn and Koners (2011).

**Sender versus receiver**

During KT and TT, the sender is an individual (e.g. scientist, expatriate or consultant), group or organization that is seen as resourceful, valuable, inﬂuential, talented or which has distinguished himself/itself from others (Wagner, 1994). If we relate it to an organizational setting, then the sender is highly needed to close the gap in daily work processes and to bring new ways of doing work to the organization. The sender carries knowledge regarding industrial products, services, customer needs, technology and trends, each of which constitutes an important source of innovation (Lin et al., 2005). Therefore, the characteristics of a sender play an important role in enhancing knowledge and technology transfer.

Similarly, the receiver or user might also consist of individuals, groups and organizations that will beneﬁt from the transfer (Lin et al., 2005). During the transfer processes, the sender disseminates new knowledge and technology through a particular medium, either formally (e.g. forum, workshop) or informally (e.g. daily interaction basis) to the organization’s members. In this case, we consider the individual employee in an organization as the smallest unit or acting as the organization’s representative to receive whatever knowledge and technology is transmitted before it can be distributed to other members in the organization. Therefore, we suggest that the roles of individual employees and the organization’s environment as receivers are important in supporting the transfers.

In this context and based on signaling theory, KT refers to parties who: (1) give out signals; (2) assign meaning to the signals (Liu et al., 2014). Aside from local employees, individuals involved in KT process also include foreign personnel such as expatriates and consultants. Hence, KT takes place where an employee of a ﬁrm becomes knowledge sender, while others (inside or outside the organization) act as knowledge receiver and vice versa (Hsu, 2012).

Young and Lan (1997), in contrast, refer to technology senders as technology owners representing an organization, and sometimes they are called technology middlemen or technology vendors. The technology receiver on the other hand, might be a private enterprise, state-owned enterprise or the ﬁrm’s local personnel. Hence, TT frequently involves foreign afﬁliates, which includes cross-border mergers and acquisitions as well as joint venture ﬁrms. TT depends on the technological level of the foreign investor or afﬁliate, on its ability to bridge the technological gap or correct the information asymmetry between technology supplier and receiver (Young and Lan, 1997). Therefore, the main difference in relation to sender versus receiver in TT and KT is that the sender and receiver for KT are mainly employees in the organization, while those in TT are the owners of the technology, which are normally (but not always) the organization or ﬁrm itself because technology ownership goes to an institution, not an individual.
Intrafirm versus interfirm

Both KT and TT can take place within the organization (intrafirm) and between organizations (interfirm); this can happen domestically and internationally. Intrafirm KT involves two directions: inward and outward flows (Lai et al., 2016). Inward flows, or inflows, refer to knowledge acquired by a focal unit, from peer units within the same corporation; and outward flows, or outflows, refer to the knowledge disseminated to peer units by the focal unit (Gupta and Govindarajan, 1991). As such, an organizational unit is often both a knowledge source and a knowledge receiver (Gupta and Govindarajan, 1991; Harzing and Noorderhaven, 2006). At the intrafirm level, transfer is possible at three distinctive levels: a) individual, b) group or team and c) division or department. Within an organization, therefore, it is said that the flow of information is more through KT as it involves a wider circle of knowledge instead of technology. Within an organization, however, TT takes place through the employment of foreign personnel and technologists for technology commercialization who are tasked with patenting, licensing or sale of products and training.

KT between organizations is often materialized through consultancy, research collaboration, staff secondment, KT partnership or joint ventures (Ado et al., 2017) and strategic alliances (Mowery et al., 1996; Simonin, 1999). The way personnel from organizations interact for mutual learning affects how knowledge is transferred. Other mechanisms of KT are customer–supplier relationships (Albino et al., 1998), research and development (R&D) relationships (Faems et al., 2007), franchisor/franchisee systems, voluntary and cooperative partnership (Burkink, 2002). Most of the time, knowledge regarding marketing and production feasibility is in great demand by recipients and business partners.

Unlike KT, TT often occurs through technology transfer offices (Boh et al., 2016), science parks and technology incubators (Diez-Vial and Montoro-Sanchez, 2016), venture capital industry initiatives (Colombo et al., 2016), subsidies and financing mechanisms (Audretsch et al., 2016) and multinational corporation activities (Yoon and Han, 2017). For instance, in the transfer of technology from the university to firms, benefiting from the university’s technology transfer office and the technology park (Calderón-Martínez and García-Quevedo, 2013).

Hence, TT is any process by which one organization or firm gains access to another’s technical information and successfully learns and absorbs it into the production function of the former. To conclude, TT largely involves the movement of commercial technologies across countries (involving firms that have technology offices), as well as within countries, both intra- and inter-firms. While KT is a hidden process, TT is materialized through various means that may involve tangible and intangible knowledge, which is also transferred through TT offices, science parks and technology incubators and other learning approaches such as consultancy, research collaboration, staff secondment, joint ventures and strategic alliances. KT also takes place through forums, conferences, workshops, on-the-job training as well as industrial training of students.

Foreign direct investment (FDI)

Foreign direct investment (FDI) has been found to create many externalities in the economies of developing countries in the form of benefits available through transfers of general knowledge, specific technologies in production and distribution, industrial
upgrading, work experience for the labor force, the establishment of finance-related networks and telecommunications services. There is a relationship between FDI for expenses in infrastructure, KT and TT in many developing countries (Acharya and Keller, 2009; Osano and Koine, 2016). International KT and TT are more impactful compared to domestic transfers, particularly in high technology industries, because of the magnitude of knowledge and technology involved. This is associated with the FDI received by the recipient country. More recently, countries such as Mexico, Brazil, India and China view FDI by firms from technologically advanced countries as a vehicle of TT. Likewise, developing countries such as Malaysia, Thailand, Singapore, South Korea and Taiwan treat FDI from multinational corporations (MNCs) as a major means of technology development (Wang and Chien, 2007; Nezu, 2007; Sadoi, 2011). Zhang (2001) refers to FDI as long-term participation by a country in another country, and that it usually involves participation in management, joint-venture, transfer of technology and mobility of expertise. Bodman and Le’s (2013) study further found that, apart from human capital being necessary for the direct general enhancement of the technological level itself, it is also essential for the recipient firm to have the ability to learn from foreign technological sources.

FDI brings in new technologies. Consequently, TT incurs more cost than KT. The cost of transfer, which can be defined to include both transmission and absorption costs, may therefore be considerable when the technology is complex, sophisticated, and the recipient firm may have inadequate capability to absorb the technology (Teece, 1977). The cost of communication, or information transfer, is a fundamental factor influencing the world-wide diffusion of technology (Nezu, 2007), and it is frequently dependent on FDI. Hence, TT is more closely associated with FDI, measured in monetary value than KT.

Workers’ mobility
Workers’ mobility refers to the presence of international personnel in an organization or MNC that normally comes with the inflow of FDI. KT is known to involve higher mobility of workers because knowledge resides in people’s minds (Song et al., 2003). While the major mode of TT operation is through technology transfer centers and R&D Institutes, KT depends on workers’ mobility. According to Argote and Ingram (2000), the strength of moving people as a KT mechanism complements the speed and magnitude of moving tools or TT based on the framework of knowledge reservoirs that comprise people, tasks and tools. People are able to transfer tacit and explicit knowledge when they move and adapt their knowledge to the contexts of the recipient environment (Argote and Ingram, 2000). Hence, it could be implied that the higher the number of foreign personnel in a local firm, the higher is the expected level of KT, which eventually leads to a higher degree of TT.

Kidanemariam (2014) refers to workers’ mobility as human capital transfer that normally involves professionals or expatriates (if they involve cross-border movement). It also refers to an international movement of people associated with nationals studying or working abroad for a specified duration. This group of individuals, upon their return, apply their accumulated knowledge, experience and technological skills through knowledge transfer initiatives with local employees. In addition, surveys among Indian and Chinese PhD holders in the USA revealed that more than half of the scientists and technologists went home because of many reasons among which was the desire to perform role as knowledge innovators in their respective countries (Saxenian, 2005; Wadhwa, 2009). Kunasegaran et al. (2016), who call these individuals professional returnees, find that they have important roles in both KT and TT, but more so in the former.

The summary of some dimensions differentiating KT and TT discussed above is shown in Table I.
<table>
<thead>
<tr>
<th>Dimension</th>
<th>Knowledge transfer (KT)</th>
<th>Technology transfer (TT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Knowledge versus technology characteristics</td>
<td>Knowledge is more tacit and less explicit Knowledge resides mostly in people’s minds Less tangible than technology Amorphous or less structure Difficult to measure quantitatively Patents less relevant Less intellectual property rights (IPR) involved</td>
<td>Technology is more explicit/physically visible and stored in database, software, document More tangible with physical structures Precise or specific in nature Can be measured quantitatively Patents are frequently involved The presence of IPR, an incentive and for protection in technology commercialization</td>
</tr>
<tr>
<td>2. Usage of KT and TT in country’s development</td>
<td>Known and used later than TT in county’s development (such as Japan, Malaysia, Korea and Kazakhstan) With the advancement of the typology of knowledge in terms of ‘tacit and explicit characteristics’, KT becomes significant</td>
<td>Known and applied earlier than KT (in the selected countries) as the countries equate knowledge and technology for innovation and economic development TT becomes prominent when the country is technologically advanced</td>
</tr>
<tr>
<td>3. Sender versus receiver</td>
<td>Sender: Foreign personnel Local personnel Consultant Receiver: Local personnel Foreign personnel Organizational peer</td>
<td>Sender: Foreign investor and personnel Technology owner/scientist Technology middleman/vendor Consultant Receiver: Local personnel Technology middleman/vendor Consultant/scientist</td>
</tr>
<tr>
<td>4. Intra-firm versus inter-firm</td>
<td>Involves departments, divisions, firms Mechanisms are mainly through consultancy, research collaboration, staff secondment, KT partnership and industrial training of students Through forums, conferences, workshops, on-the-job training</td>
<td>Joint ventures between firms Merger and acquisition firms Licensing Exporting/importing or sale/purchase of machinery goods Spinoff companies (commercializing technology) Collaboration Venture capital industry initiatives to research institute and industrial firm Technology incubators, R&amp;D centers, science parks</td>
</tr>
<tr>
<td>5. Foreign direct investment (FDI)</td>
<td>FDI viewed by investors from technologically advanced countries as a vehicle of KT Knowledge that consists of technology will transfer faster than knowledge without technology</td>
<td>FDI viewed by investors from technologically advanced countries as a vehicle of TT Transmission and absorption costs of technology are higher than for KT FDI brings in relevant technologies</td>
</tr>
<tr>
<td>6. Workers’ mobility</td>
<td>Workers’ mobility leads to KT through expatriates and host country nationals and vice versa Through higher education and training of personnel abroad/in industrialized nations Strength of moving people as a KT mechanism complements the speed and magnitude of TT</td>
<td>TT is positively associated with the level of FDI TT is accompanied by worker’s mobility because people are capable of adapting tools and tasks to new contexts</td>
</tr>
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</table>
Implications for future research
As this article is limited to a literature review analysis of KT and TT, future research is necessary to find and validate empirical evidence on the differences identified. Such evidences can come from multi-perspective approaches and frameworks. First, the use of in-depth interviews to key personnel responsible for specific tasks in the commercialization of technology such as basic and applied R&D, technology trial at the incubator center, licensing and the IPR development, with a consideration what leads to different levels of KT and TT. This is significant because the key personnel could articulate various expressions in relation to the truth, practicality and significance of the tacit and explicit knowledge in the transfer process. The key personnel may come from different sectoral contexts of a country such as engineering, agriculture, health, pharmacy and food manufacturing that have different background in handling various soft and hard technologies.

Second, there is a need to study the speed at which fast industrializing countries such as South Korea, Taiwan and Singapore as well as China receive and absorb technologies from their partnering counterparts abroad. For this purpose, a comparative country analysis is appropriate by incorporating various HRD dimensions such as T&D of skilled workers, retraining program of returning scientists/technologists and other mobile workers, leadership and mentoring initiatives involving senior and young employees in KT and TT. Also to be included are FDI indicators such as the magnitudes and the country sources, the proportion of FDI allocated for HRD initiatives in a specific sector. Research on country development analysis should proceed, for instance, in terms of temporal aspect of relationship between firms that come from two countries, whether this relationship influences the speed and level of KT and TT differently. Take for an example the long historical relationship between Malaysia and two developed countries of Britain and Japan of which a comparative analysis on the two relationships may be instrumental to explain the transfer process.

Third, future research capturing the specific influence of personal and organizational factors on KT and TT could provide additional insights on the dynamics of the transfer process from the current global perspective of KT and TT that depend heavily on digital means in communication and knowledge management. From the perspective of sender versus receiver, therefore, it is very pertinent to differentiate personal factors based on who are the receivers and senders whether they are scientists, technologists or consultants as their competence in the usage of digital technologies varies depending on job contexts.

Fourth, it is noted that employees, as senders and receivers, have a tendency to remember interrupted tasks resulting from barriers better than they do remember those that have been completed. In addition, an organization learns to cope with stickiness (Szulanski, 2000) or difficulty by drawing on the lessons from previous experience with transfers. Thus, it is suggested to study predictors of stickiness to KT and TT, as it is expected that factors that affect an opportunity to transfer knowledge and technology are more likely to predict difficulty during the initiation phase, whereas factors that affect the execution of the transfer are more likely to predict difficulty during subsequent implementation phases (Szulanski, 2000). As the initiation to execution phases of KT and TT take a long duration, a cross-sectional survey involving a diachronic analysis should be the suggested approach because longitudinal archival data may be non-existent in an organization or in two organizations that the transfer occurs.

Fifth, by concentrating on factors that relate to KT and TT, with special insight on types of institutions involve such as firm and university research centre or other knowledge-driven organizations, could expand upon our findings. Moving forward, future researchers could examine a number of HRD and managerial-related issues such as cultural and leadership compatibility between institutions that are known to focus on KT and TT
differently. This is so required as according to Gopalakrishnan and Santoro (2004), structure of organization (mechanistic versus bionic), shared vision and support systems, which are all dependent on leadership, instrumental to KT and TT.

Finally, it is recommended to study the roles of higher education in science, technology, engineering and mathematics (STEM) as well as the academic and professional network developed during post-graduate studies abroad among the graduates and returnees in their homeland. This is a promising area for future research to embark on as the individuals involved are considered ‘mobile workers’ who have the accumulated knowledge and experience related to specific technological specialization that should be transferred and made to good use by peers in the host country.

**Recommendations for practice**

Managers should use the insights on differences between KT and TT in managing relevant human resource practices in their organizations so that planned activities are suited to the respective goals of KT and TT. The practical implications of this article to organizational managers are as follows:

- From the perspective human resource development and training, organizational managers should plan and execute training activities differently for KT and TT based on the nature and characteristics of knowledge versus technology. This implies that: i) differentiation should take in the form of the contents of subject-matter to be delivered to training participants that arises from the characteristics of ‘tacit and explicit’ nature as well as the tangibility issue as TT involves more tools and physical dimension of knowledge compared to KT; ii) consequently, the sites for training for KT program may be different from TT as the latter requires tools and equipment that could only be found in laboratory, science park and technology incubator centre; iii) the trainer recommended to be involved in TT would be technology specialist and scientist, as well as subject-matter specialist or consultant who are responsible for activities in the chain of technology commercialization such as patenting, IPR and licensing. On the other hand for training in KT, it would be possible to involve a trainer who is a generalist and not necessarily very competent about the specific technology; iv) TT requires higher levels of learning and thinking and may involve psychomotor and hands-on skills as both involve more explicit and encoded knowledge than tacit knowledge. Therefore, elements of analysis, evaluation, creation and recreation should be emphasized in training and knowledge acquisition programs; v) TT involves precision technology that is fast changing over time. Hence, more periodic problems-based as well as commercial-based training programs should be designed for employees who plan for R&D activities; vi) managers in R&D institutions therefore, should plan strategic short and long-term training programs about TT processes because of the fast-changing nature of technology, as according to Gopalakrishnan and Santoro (2004), this is necessary to suit with the change-oriented or organic culture of organization; and vii) managers should be aware that employees who are involved in KT and TT should also be knowledgeable not only with research intricacies in knowledge and technology development but should also be skillful in commercialization practices such as patenting, IPR negotiation, licensing and inter-organization collaboration.

- Many organizational managers are currently in the age groups of middle-level (35 to 45 years) or even younger (the millennials). KT and TT do vary in their existence in some countries based on their evolution and development. This has implication
when a firm wants to start a KT or TT network with another firm abroad, the manager of the former should study the background details of KT and TT of the partnering firm against the latter. This implies the younger managers should equip their knowledge in relation to countries’ KT and TT development, as they may lack certain knowledge and experience compared to the senior managers.

- As there is a co-existence of senders and receivers of knowledge and technology among employees, it is crucial for organizational managers to use clear definition of performance assessment indices that is context-specific, measureable and attainable for the respective functions of KT and TT. Even though there may have some overlapped activities in relations to the functions as senders and receivers, types of knowledge and technology, involvement within or outside organization and the costs involve that are associated with FDI, the final outcomes of KT and TT would be the differentiated knowledge and technology gained that are specific to the functions of a receiving organization. This assessment has been found as one of the predictors of career aspiration of employees in R&D institutions (Ismail and Ramly, 2011).

- It is evident that knowledge that consists of technology will transfer faster than knowledge without technology, as well as there is a positive relationship between FDI and TT. Therefore, organizational managers should formulate and create global strategic plan to bring in investors with an anticipated magnitude of FDI. Managers should establish global network with potential investors and collaborators such as MNCs, R&D institutions and universities. At the domestic level, managers should negotiate with companies and entrepreneurs as the role of TT is not only for product commercialization but also for students’ industrial training and job creation. Essentially, it is said that managers also create and facilitate pathways for the transfer of innovations to wider commercial partners.

- Workers’ mobility is a form of human capital investment (Vithana et al., 2018). This is further supported by Argote and Ingram (2000) that the strength of moving people as a KT mechanism complements the speed and volume of moving technologies. Other than about technologies, mobile workers also have rich experience in work culture (Ismail et al., 2016). A practical implication to managers is that they should capitalize on the accumulated knowledge of these professionals in KT and TT training program as trainers, consultants and subject-matter specialists and more so for mentoring initiative as a mentor-cum-leader in a specific technology dissemination and commercialization.

**Conclusion**

From the above analysis, it is concluded that differentiating KT and TT is not a straight-forward process as both constructs are inter-related and complement each other. Nevertheless, our analysis of the constructs shows that KT and TT can be differentiated based on the characteristics and conceptualization of knowledge and technology, and the resulting concepts of KT and TT based on processes, as well as the contexts that involve individuals as senders and receives. The analysis also concludes that the way to differentiate KT and TT is to examine intra- and inter-organizations that go beyond the country’s borders, which then inevitably includes FDI and mobility of human resources as knowledge keepers and owners. The advancement of taxonomy of knowledge in the form of
tacit-versus-explicit dimensions leads to a significant and challenging differentiation between KT and TT.

It is further concluded that in the earlier stages of development of many countries, there is no clear differentiation between KT and TT, and the two concepts are often used interchangeably. Furthermore, in the earlier days, much of the knowledge and technology had been transferred informally by migration, imitation, reverse engineering, import and purchase of capital goods. In recent years, the transfers have become more formalized and accelerated through various ways such as FDI of MNC from developed to developing countries, cross-border interorganizational collaboration, university-firm linkage, merger and acquisition, joint venture and organizational alliance, higher education and advanced technology training programs, import and export of goods and government policies on R&D. The establishment of technology transfer centers, science parks and technology incubators is also instrumental in facilitating the transfer process, especially TT. Finally, workers’ mobility or the movement of professionals from one country to another helps to bring foreign expertise to the receiving country. This is especially important in this globalized era as the movement of skilled workers as a KT mechanism expedites the strength of moving technologies (or TT) within and between organizations.

References


**Further reading**


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