The Entropic Knowledge Dynamics as a Driving Force of the Decision-Making Process

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Abstract: The entropic knowledge dynamics departs from the iceberg metaphor used for the explicit and tacit knowledge by introducing the energy metaphor, which leads to the multifield theory of organizational knowledge. According to this theory, there are three fundamental fields of knowledge: rational, emotional, and spiritual. Each of these fields transforms continuously into another field, creating a synergy effect which impacts the decision making process. In this front, the purpose of this paper is to describe the new entropic dynamics approach and to investigate its impact on the decision-making process by using quantitative research methods. Experts in a workshop debated on the role played by each field of knowledge and the entropic dynamics on decision making. Then, a questionnaire has been developed containing 30 questions structured on two levels of complexity. The first level contains questions addressing the role played by each of the three forms of knowledge on decision making while the second level contains questions addressing the way knowledge dynamics impacts decision making. Since we are interested in the generic phenomena of decision making and the role played by knowledge dynamics, we invited students in management and business administration from two important universities in Romania to participate in the questionnaire-based survey during January and February 2017. Finally, 399 valid questionnaires were retrieved. This research demonstrates that students attach the highest importance to the Entropic Knowledge Dynamics, thus, identifying knowledge transformations and interactions as the most prominent factor. The entropic knowledge dynamics shows up as a driving force of the decision-making process. As the findings also indicated, there are no statistically significant differences among the cohorts of students in terms of gender and education level; nevertheless, setting the faculty year as criterion brings forward novel insights in that three out of the four considered knowledge dimensions displayed meaningful differences.

Keywords: rational knowledge, emotional knowledge, spiritual knowledge, knowledge dynamics, decision making, multifield theory of organizational knowledge

1. Introduction

The dynamic theory of organizational knowledge creation has been proposed by Nonaka (1994), and developed by Nonaka and Takeuchi (1995), and Nonaka et al. (2008). This theory is based on the iceberg metaphor of knowledge which defines explicit knowledge and tacit knowledge, and on the SECI model which introduces four conversions for knowledge: Socialization, Externalization, Combination, and Internalization. Explicit knowledge represents that part of the individual knowledge that can be expressed by using a natural or symbolic language (Davenport and Prusak, 2000; Nonaka and Takeuchi, 1995). Explicit knowledge can be interpreted as being the visible part of an iceberg with respect to the water surface. Tacit knowledge is a result of direct experience and hard to formalize and transfer to others (Baumard, 1999; Davenport and Prusak, 2000; Polanyi, 1983). Tacit knowledge can be interpreted as the hidden part of the iceberg, which is under the water surface and cannot be seen. As the hidden part of the iceberg is much larger than the visible part of it, tacit knowledge is a result of the direct experience and it is much complex and larger than the explicit knowledge. According to Nonaka and Takeuchi (1995, p. 8), “Subjective insights, intuitions, and hunches fall into this category of knowledge. Furthermore, tacit knowledge is deeply rooted in an individual’s action and experience, as well as in the ideals, values, or emotions he or she embraces”. Tacit knowledge can be shared between people by using body language and imitation during socialization, and can be transformed into explicit knowledge at the individual level by externalization. Explicit knowledge can be shared and amplified in a social context by combination, and can be transformed into tacit knowledge at the individual level by internalization. Nonaka’s model of knowledge creation dynamics has been adopted by many researchers due to its simplicity and intuitiveness. However, the dynamics embodied in this model is based on the iceberg metaphor and idealtastic processes that limit its power of explanation (Bratianu, 2010; Gilsby and Holden, 2003; Gourlay, 2006). Also, tacit knowledge sharing during socialization has to overcome the difficulty of the internal stickiness (Szulansky, 1996).
The overcoming of the limits of the Nonaka’s paradigm of knowledge dynamics can be performed only by changing the knowledge metaphor, since thinking is a metaphorical process (Lakoff and Johnson, 1980, 1999; Moser, 2000). The mind uses metaphors as a means to improve our understanding about new concepts, especially when they reflect intangible entities, by using well-known tangible objects. As Pinker (2008, p. 241) underlines, “Conceptual metaphors point to an obvious way in which people could learn to reason about new, abstract concepts. They would notice, or have pointed out to them, a parallel between a physical realm they already understand and a conceptual realm they don’t yet understand”. The research performed by Andriessen (2006, 2008, 2011) and Andriessen and Boom (2007) in the field of intellectual capital demonstrates that any definition of knowledge is bounded by the target domain of the metaphor used. “Knowledge is not a concept that has a clearly delineated structure. Whatever structure it has, it gets through metaphor. Different people from different cultures use different metaphors to conceptualize knowledge” (Andriessen and Boom, 2007, p. 3). Thus, understanding Ikujiro Nonaka’s theory on knowledge creation dynamics implies a good understanding of the Japanese education and culture, which generate a different organizational behavioral than in the Western companies.

A paradigmatic shift in the metaphorical thinking concerning the concept of knowledge was done by Bratianu and Andriessen (2008) by introducing the energy metaphor of knowledge. The shift from conceptualizing knowledge as an iceberg, stock, or flow (Bolisani and Oltramari, 2012; Nissen, 2006; Nonaka et al. 2008) to energy opens new directions towards the understanding and research of knowledge and its contribution to the decision-making process (Baron, 2000; Blake, 2008; Hill, 2008; Kahneman, 2011; Vătămănescu et al. 2016). These new directions will be discussed in the next section of this paper. In the light of this new paradigm, the research questions of the present study are the following:

RQ1: Are there any differences in the capitalization of knowledge fields when people make decisions?
RQ2: To what extent is the entropic knowledge dynamics important to people when making decisions?
RQ3: Are the subjects’ socio-demographic characteristics relevant in the capitalization of knowledge fields and dynamics when people make decisions?

In order to answer to these questions, the paper presents an empirical research based on a questionnaire addressed to students in management and business administration from two top universities in Romania. The structure of the present paper is organized as follows: after this brief introduction a theoretical analysis will reveal the structure of knowledge in the new paradigm, and then the research methodology and findings will be further presented. Finally, the paper advances the formulation of the main research conclusions.

2. Theoretical analysis

The first generation of knowledge metaphors used physical objects or stocks of such objects as a source field (Andriessen, 2006; Bolisani et al., 2012; Borgo and Pozza, 2012; Davenport and Prusak, 2000). Objects are placed in the source domain and some of their attributes mapped onto the target domain of knowledge. Thus, as a consequence of this metaphor, knowledge can be accumulated, stored, moved, distributed and measured. Knowledge as physical objects is the most frequently used metaphor in the published literature dedicated to knowledge, knowledge management, and intellectual capital. In a textual analysis on the metaphorical nature of intellectual capital, which is composed mostly of knowledge, Andriessen (2006) shows that Davenport and Prusak used this metaphor in the first chapter of their book, Working knowledge: How organizations manage what they know in proportion of 59% of the total number of all metaphors used in that chapter. Nonaka and Takeuchi used - in the fifth chapter of their well-known book, The knowledge-creating company: How Japanese companies create the dynamics of innovation - metaphors based on physical objects in a proportion of 29% of the total number of metaphors used in that chapter. Although this is just an example, it is significant since both books are highly influential and highly cited in knowledge management.

The second generation of knowledge metaphors replaced objects which are static with flows of fluids or stocks-and-flows to make the transition towards dynamics (Bolisani and Oltramari, 2012; Leistner, 2010; Nissen, 2006; Nonaka and Takeuchi, 1995; Nonaka et al., 2008). Flow is so much familiar to everybody that it is used frequently in metaphorical thinking. When using the expression “knowledge flow”, people can easily visualize the motion of knowledge both in space and in time within a company. Nissen (2006, p. xx) defines knowledge flow as follows: “To the extent that organizational knowledge does not exist in the form needed for
application or at the place and time required to enable work performance, then it must flow from how it exists and where it is located to how and where it is needed. This is the concept of knowledge flows”.

The energy metaphor of knowledge (Bratianu and Andriessen, 2008) opens a new generation of metaphors which departs from the tangible objects and Newtonian thinking. The main ideas of this new paradigm (Bratianu, 2011a, 2011b, 2015; Bratianu and Orzea, 2013) are the following:

- Knowledge is a field.
- There are three basic fields of knowledge: rational, emotional, and spiritual.
- Knowledge from each field can be transformed into knowledge from another field.

The first idea introduces the attributes of intangibility and nonlinearity. That means that organizational knowledge is not a sum of all individuals’ knowledge, but an integration of those entities. The second idea breaks down the tacit knowledge into its main parts and defines emotional knowledge and spiritual knowledge as independent entities. Thus, rational knowledge, emotional knowledge and spiritual knowledge generate a continuous spectrum which leads to the multifield theory of knowledge. As Baumard (1999, p. 19) emphasizes, “knowledge is the object of a continuum that extends from interpreted information (such as a simple penciled diagram) to the non-representable (premonitions, for example)”. The third idea introduces the concept of entropic transformation of one form of knowledge into another, by analogy with thermodynamic transformation of one form of energy into another (Atkins, 2010; Georgescu-Roegen, 1999). This transformation is irreversible. That constitutes the essence of the entropic knowledge dynamics.

Rational knowledge is the result of the rational mind and logical processing information. As Russell (1972, p. 153) explained synthetically, “knowledge consists in reflection, not in impressions, and perception is not knowledge”. In the theory of knowledge management (Becerra-Fernandez and Sabherwal, 2010; Davenport, 2000; Hislop, 2005; Nonaka and Takeuchi, 1995), rational knowledge is equated with explicit knowledge and many researchers focus almost exclusively on it. Rational knowledge is obtained by processing rational information in the conscious zone of our brain, a fact for which we are always aware of it. It is a result of the externalization (Nonaka and Takeuchi, 1995) and codification processes (Balconi, 2002; Cacciatori et al., 2012) by using a natural or symbolic language. Rational knowledge has been considered from ancient times to be objective and reliable in comparison with emotional knowledge which is subjective (Russell, 1972). By analyzing comparatively his thoughts coming from the mind and his sensations coming from senses, Descartes discovered that thought is the only attribute that belongs to him and cannot be detached from him: “What of thinking? I find here that thought is an attribute that belongs to me, it alone cannot be separated from me. I am, I exist, that is certain” (Descartes, 1997, p. 141). Science and technology have developed based on rational knowledge and rational decision-making. The European education has been conceived almost entirely on rational knowledge, including the economic education.

Emotional knowledge is the result of emotions and feelings and appeared in knowledge management under the umbrella of tacit knowledge (Nonaka and Takeuchi, 1995). However, emotional knowledge is fundamental for our thinking and decision making and must be considered as an independent field of knowledge (Bratianu, 2015; Damasio, 1999; Ekman, 2003; Gladwell, 2005; Goleman, 1995; Kahneman, 2011; Mayer et al., 2004). According to Damasio (1999, p. 26), emotional knowledge represents a specific kind of wordless knowledge: “The simplest form in which the wordless knowledge emerges mentally is the feeling of knowing”. Spiritual knowledge constitutes the third fundamental form of the knowledge spectrum. If rational knowledge reflects the objectivity of the physical environment we are living in, and emotional knowledge reflects the subjectivity of our body interaction with the external world, spiritual knowledge reflects our understanding about the meaning of our existence (Bratianu, 2015; Maxwell, 2007; Zohar and Marshall, 2000, 2004). According to Maxwell (2007, p. 274), “We have to learn to see aspects of the world around us: stones, people, trees, sky. Equally, we have to learn to see meaning and value in the world around us, in our environment, in events, in human actions and lives”. Individuals working together in a company share their values and beliefs about life, work, and future generating in time an organizational culture (Ghinea and Bratianu, 2012). Spiritual knowledge becomes essential in building up corporate social responsibility and developing sustainable competitive advantage (Basu and Palazzo, 2008; Benston and Hartgraves, 2002; Branson, 2011; Gao and He, 2017; Lange, 2008; Pinto et al., 2008; Wang et al., 2011). Hussink et al. (2017) stress the fact that knowledge practices are socially embedded phenomena, affected by the managers’ institutional and cultural contexts.
The entropic knowledge dynamics is based on the assumption that these fundamental fields of knowledge are in a continuous interaction, and knowledge from each field can be transformed into knowledge of any other field. This assumption comes from the energy metaphor where one form of energy can be transformed into another form of energy in concordance with the thermodynamics laws. For instance, in the source domain of the energy metaphor, we may consider three forms of energies: mechanical, thermal, and electrical. From physics, we learn about the transformation of mechanical energy into thermal energy, and the reverse process of transformation thermal energy into mechanical energy. This dynamics from the source domain of the metaphor can be mapped onto the target domain suggesting the transformation of rational knowledge into emotional knowledge and the reverse process of the transformation of emotional knowledge into rational knowledge. A good example of this entropic transformation can be intuition, which constitutes the ability of synthesizing information quickly and effectively in complex situations and short time horizons. As demonstrated by Dane and Pratt (2007), intuition is a nonconscious process which involves holistic knowledge. A good example of this entropic transformation can be intuition, which constitutes the ability of synthesizing information quickly and effectively in complex situations and short time horizons. As demonstrated by Dane and Pratt (2007), intuition is a nonconscious process which involves holistic knowledge. As entropic transformations stressing our human nature, as Doya and Shadlen (2012, p. 913) concluded in their research: "Decision-making brings neuroscience into the domain of ethics, philosophy and the law and thus strikes at what it is that makes us human".

Considering the two systems of thinking, System 1 processing emotional knowledge and System 2 processing rational knowledge, Kahneman (2011, p. 44), remarks: “One of the main functions of System 2 is to monitor and control thoughts and actions ‘suggested’ by System 1, allowing some to be expressed directly in behavior and suppressing or modifying others”. Moreover, “Breakthroughs in brain science have revealed that people are primarily emotional decision makers” (Hill, 2008, p. 2). The dynamics between mechanical energy and electrical energy can be mapped onto the target domain of the energy metaphor to suggest the dynamics between rational knowledge and spiritual knowledge. In knowledge dynamics, rational knowledge contributes to the decision making through direct interaction with the system of spiritual values (Baron, 2000; Blake, 2008; Branson, 2011; Bratianu, 2015; Pinto et al., 2008; Schein, 2004; Wang et al., 2011). Chang (2017, p. 427) emphasizes the important role played by this transformation in developing “the ability of students to build their information ethics cognition” based on the Confucian ethics. Finally, the dynamics of thermal energy and electrical energy known from electricity can be mapped onto the dynamics of emotional knowledge and spiritual knowledge. In psychology, this dynamics can be illustrated by the Buddhist monks who try through hard physical and mental work to reduce their negative emotions in order to increase their state of happiness (Ricard, 2007).

In managerial decision-making process, all three dynamics interact in a nonlinear way (Bratianu, 2009) yielding a synergistic outcome. The process is more evident in the case of developing conceptual skills (Bratianu and Vătămănescu, 2016), strategic thinking and organizational change (Blake, 2008; Bratianu, 2015; Kotter, 1996, 2008; Nonaka and Zhu, 2012), ambidexterity vision and organizational learning (Cegarra-Navarro et al., 2017). From an integrated perspective, Hogarth (2001, p. 61) posits that “emotions and affect can, therefore, be important inputs to intuitive thought in the sense that they can induce responses without corresponding awareness”. Also, experienced-based tacit knowledge which integrates emotional and spiritual knowledge can be an important input in decision-making. The result of this complex entropic transformation is usually called intuition (Klein, 2003). Intuition is one of the most used practical ways of transforming the accumulated experience into action through judgment and decision-making. Klein (2003, p. xvii) considers intuition as “a natural extension of experience”. Thus the intuitive decision-making incorporates the influence of emotional knowledge, spiritual knowledge, and their entropic transformations upon the decision-making without any contribution coming from the rational knowledge and all the theories learned in schools. The entropic dynamics of the knowledge fields is an antecedent of heuristics. According to Moustakas (1990, p. 13), “The heuristic process challenges me to rely on my own resources, and to gather within myself the full scope of my observations, thoughts, feelings, senses, and intuitions”.

Starting from the theoretical arguments presented above, the present study addresses the configuration of the entropic knowledge dynamics integrating the cognitive, emotional and spiritual knowledge, the three
knowledge types in their own right, and the decision-making process. Thus, four main factors and the relationships among their components are considered.

The research hypotheses of the study are the following:

H1: When making decisions, students capitalize the entropic knowledge dynamics more than rational, emotional or spiritual knowledge taken separately.
H2: There are significant differences between undergraduates and graduates regarding knowledge-based decision-making processes.
H3: There are significant differences across the student cohorts according to the faculty year criterion.
H4: There are significant differences between the male and female students regarding the knowledge-based decision-making processes.

2.1 Sample

To test these assumptions, we conducted a survey during January and February 2017. A total of 700 students from two top universities in Romania were invited to participate at a questionnaire-based survey describing the way they make decisions, be they rational, emotional or spiritual. Upon acceptance, the subjects were asked to fill in a self-administered questionnaire. Finally, 399 valid questionnaires were retrieved, thus yielding a response rate of 57%.

The structure of the statistical population brought to the fore the following features: the subjects’ average age is 21 (M=21.39, SD=2.33), the gender distribution indicating 61.2% females and 38.8% males and the education level 66.7% undergraduates and 33.3% graduates.

2.2 Procedure

The subjects were invited to participate in a questionnaire-based survey by evaluating various assertions rated on a Likert scale with five options: 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree). Further, the socio-demographic items were meant to approach the general profile of the respondents, consisting of: age, gender, education level, faculty year and university. The sample was deemed to be large enough to analyze the data by means of principal components extraction using SPSS software (version 20) and to provide cogent results.

2.3 Measures

At the conceptual level, Four main dimensions were developed, reflecting the knowledge fields and their entropic dynamics. Each dimension was described by at least three items within a self-constructed questionnaire containing 30 items, formulated as assertions. The rated assertions referred to both attitudes and behaviors, thus allowing an overall image on how students think and act on a common basis when they have to decide on current matters.

The first dimension stressed on the rational knowledge objectivations, including here: a. the need for evidence-based arguments when deciding; b. the performance of objective step-by-step examinations and appraisals as a prerequisite of viable solutions; c. the leverage of rational thinking in providing feasible answers to different problems; d. the exigency to be objective and rational in the decision-making process.

The second dimension, namely Emotional Knowledge, was operationalized by means of: a. the belief that perceptions may provide good solutions to different problems; b. the faith in one’s feelings when making decisions; c. the role of emotional intelligence when it comes to making good decisions. Likewise, the third dimension – Spiritual Knowledge – consisted of indicators envisioning the following aspects: a. the perceived influence of cultural values on making good decisions; b. the preservation of a positive attitude when confronted with difficult tasks; c. the valuation of sharing the same values with team colleagues as an important factor in solving group problems and projects.

The fourth dimension, that is Entropic Knowledge Dynamics, integrated the highest number of items with the view to depict various forms of knowledge transformations, as follows: a. the role of intuition on the emergence of multiple good ideas; b. the influence of certain feelings on the imperative to analyze all the data and associated arguments more systematically and thoroughly; c. the examination of external date via
personal experience and expectations; d. the practice to share the lessons learnt with the team on purpose to ensure a common approach on the issue; e. the usage of past experiences to elaborate on good practice; f. the employment of personal values in the process of interpreting data and making decisions; g. the openness to share feelings in order to create a positive climate for the team; h. the openness towards other people’s values when working together; i. the influence of working with similar peers in terms of values and principles on a comfortable decision-making process; j. the role of a positive climate within the team makes as an enthusiasm catalyst towards future collaborations.

3. Results and discussion

A factor analysis was computed aiming at the exploration of the factors deriving from the statements and then to bring forward a pertinent measure of the analyzed dimensions. The accuracy of the method was verified by means of the Bartlett and Kaiser-Meyer-Olkin (KMO) test as it allows the testing of the factor analysis adequacy in the context of the collected data. The obtained value of the test (i.e. KMO=0.895, Sig.=0.000) indicated the adequacy of using the method for the present research. That being the case, a principal components extraction was unfolded, employing the varimax orthogonal rotation which maximizes the variance of the factor components and, thus, ensures a smaller loading of indicators on every factor. The analysis brought to the fore seven factors comprising 54.40% of the information embedded in the original set of data (Table 1).

Table 1: Total variance explained for the first extraction

<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigenvalues</th>
<th>Total % of Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7.397</td>
<td>24.658</td>
<td>24.658</td>
</tr>
<tr>
<td>2</td>
<td>2.729</td>
<td>9.095</td>
<td>33.754</td>
</tr>
<tr>
<td>3</td>
<td>1.533</td>
<td>5.111</td>
<td>38.864</td>
</tr>
<tr>
<td>4</td>
<td>1.373</td>
<td>4.578</td>
<td>43.442</td>
</tr>
<tr>
<td>5</td>
<td>1.204</td>
<td>4.013</td>
<td>47.455</td>
</tr>
<tr>
<td>6</td>
<td>1.051</td>
<td>3.502</td>
<td>50.957</td>
</tr>
<tr>
<td>7</td>
<td>1.034</td>
<td>3.445</td>
<td>54.402</td>
</tr>
<tr>
<td>8</td>
<td>0.958</td>
<td>3.192</td>
<td>57.594</td>
</tr>
<tr>
<td>9</td>
<td>0.932</td>
<td>3.108</td>
<td>60.702</td>
</tr>
<tr>
<td>10</td>
<td>0.879</td>
<td>2.931</td>
<td>63.633</td>
</tr>
<tr>
<td>11</td>
<td>0.825</td>
<td>2.751</td>
<td>66.383</td>
</tr>
<tr>
<td>12</td>
<td>0.802</td>
<td>2.674</td>
<td>69.057</td>
</tr>
<tr>
<td>13</td>
<td>0.720</td>
<td>2.399</td>
<td>71.457</td>
</tr>
<tr>
<td>14</td>
<td>0.689</td>
<td>2.296</td>
<td>73.753</td>
</tr>
<tr>
<td>15</td>
<td>0.671</td>
<td>2.236</td>
<td>75.989</td>
</tr>
<tr>
<td>16</td>
<td>0.655</td>
<td>2.184</td>
<td>78.173</td>
</tr>
<tr>
<td>17</td>
<td>0.601</td>
<td>2.004</td>
<td>80.177</td>
</tr>
<tr>
<td>18</td>
<td>0.588</td>
<td>1.959</td>
<td>82.136</td>
</tr>
<tr>
<td>19</td>
<td>0.576</td>
<td>1.920</td>
<td>84.056</td>
</tr>
<tr>
<td>20</td>
<td>0.544</td>
<td>1.815</td>
<td>85.870</td>
</tr>
<tr>
<td>21</td>
<td>0.514</td>
<td>1.715</td>
<td>87.585</td>
</tr>
<tr>
<td>22</td>
<td>0.500</td>
<td>1.668</td>
<td>89.253</td>
</tr>
<tr>
<td>23</td>
<td>0.474</td>
<td>1.580</td>
<td>90.833</td>
</tr>
<tr>
<td>24</td>
<td>0.465</td>
<td>1.552</td>
<td>92.385</td>
</tr>
<tr>
<td>25</td>
<td>0.438</td>
<td>1.461</td>
<td>93.846</td>
</tr>
<tr>
<td>26</td>
<td>0.417</td>
<td>1.390</td>
<td>95.236</td>
</tr>
<tr>
<td>27</td>
<td>0.386</td>
<td>1.288</td>
<td>96.523</td>
</tr>
<tr>
<td>28</td>
<td>0.357</td>
<td>1.189</td>
<td>97.713</td>
</tr>
<tr>
<td>29</td>
<td>0.350</td>
<td>1.166</td>
<td>98.878</td>
</tr>
<tr>
<td>30</td>
<td>0.337</td>
<td>1.122</td>
<td>100.000</td>
</tr>
</tbody>
</table>
In accordance with the statistical requirements pointed out by Costello and Osborne (2005, p. 3), as three out of the seven identified factors had less than three indicators or their item loadings were below the threshold of 0.30, a second extraction of the main components was performed by limiting the number of factors to 4. At this level, ten items were dropped from the analysis. The structure of each factor in terms of the initial variables is presented in Table 2.

Table 2: Composition of the 4 factors extracted

<table>
<thead>
<tr>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rational Knowledge</td>
<td>Emotional Knowledge</td>
<td>Spiritual Knowledge</td>
<td>Entropic Knowledge Dynamics</td>
</tr>
<tr>
<td>Q1=0.799</td>
<td>Q8=0.770</td>
<td>Q13=0.728</td>
<td>Q19=0.556</td>
</tr>
<tr>
<td>Q2=0.743</td>
<td>Q9=0.707</td>
<td>Q14=0.800</td>
<td>Q20=0.643</td>
</tr>
<tr>
<td>Q3=0.741</td>
<td>Q11=0.814</td>
<td>Q15=0.864</td>
<td>Q22=0.607</td>
</tr>
<tr>
<td>Q6=0.735</td>
<td></td>
<td></td>
<td>Q23=0.532</td>
</tr>
</tbody>
</table>

The items inclusion in one of the four dimensions and the results from the descriptive statistics are presented in Table 3. For all the variables, the minimum value is 1, and the maximum value is 5.

Table 3: Descriptive statistics

<table>
<thead>
<tr>
<th>Item number</th>
<th>Variables</th>
<th>Factor</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>I always consider evidence-based arguments as a MUST when making a decision.</td>
<td>Factor 1</td>
<td>3.91</td>
<td>0.72</td>
</tr>
<tr>
<td>Q2</td>
<td>I consider that good solutions rely on objective step-by-step analyses.</td>
<td>Factor 2</td>
<td>3.59</td>
<td>0.77</td>
</tr>
<tr>
<td>Q3</td>
<td>Successful decision making depends on rational thinking.</td>
<td>Factor 3</td>
<td>3.88</td>
<td>0.52</td>
</tr>
<tr>
<td>Q6</td>
<td>For me, knowledge used in decision making should be objective and rational.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q8</td>
<td>I believe that my perceptions help me provide good solutions to different problems.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q9</td>
<td>I always trust my feelings when making decisions.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q11</td>
<td>I believe that my emotional intelligence has led me to good decisions.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q13</td>
<td>I believe that cultural values help me in making good decisions.</td>
<td>Factor 3</td>
<td>3.88</td>
<td>0.52</td>
</tr>
<tr>
<td>Q14</td>
<td>I have always a positive attitude when confronting with difficult tasks.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q15</td>
<td>I believe that sharing the same values with my team colleagues is important in solving group problems and projects.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q19</td>
<td>My intuition generates many good ideas.</td>
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<tr>
<td>Q20</td>
<td>When I have a strange feeling about a situation, I analyze all the data more systematically.</td>
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<tr>
<td>Q22</td>
<td>I often analyze external data through my personal experience and expectations.</td>
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<td>Q23</td>
<td>I often share the lessons learnt with my team members in order to</td>
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</table>
The preliminary analysis of the descriptive statistics of the four factors shows that Emotional Knowledge has the lowest average mean ($M_{Factor2} = 3.59$, $SD=0.77$), indicating that the respondents rely less on their perceptions, feelings and emotional intelligence when making decisions in comparison with sharing similar values and positive attitudes ($M_{Factor3} = 3.88$, $SD=0.52$) or with evidence-based, objective step-by-step analyses and rational thinking ($M_{Factor1} = 3.91$, $SD=0.72$). The highest average mean pertains to the Entropic Knowledge Dynamics, thus, supporting the importance attached by respondents to knowledge transformations and interactions ($M_{Factor4} = 4.20$, $SD=0.71$). In this respect, the first research hypothesis - H1: When making decisions, students capitalize the entropic knowledge dynamics more than rational, emotional or spiritual knowledge taken separately - was confirmed.

In order to test the second hypothesis - H2: There are significant differences between undergraduates and graduates regarding knowledge-based decision-making processes - Independent-Sample T tests were performed to see whether there are meaningful differences on the four factors between undergraduates and graduates. As for all four tests Sig.>0.05, the data indicated that there are no statistically significant differences between the two categories. This situation points to the fact that the education level does not account for a significant change in how subjects rate the knowledge fields as predictors of the decision-making processes. Hence, the second hypothesis was not supported by the empirical data.

In order to deepen the analysis, further tests were applied using faculty year as a criterion, thus, allowing to support or not the initial results. The operation was meant to bring forth a clearer insight into the students’ approaches by focusing on their actual status. Four groups were delineated, namely first-year, second-year and third-year undergraduates and first-year graduates.

In this front, an analysis of variance - One-Way Anova (i.e., Levene statistic test of homogeneity of variances) - was used to test whether there are significant differences regarding the knowledge fields and dynamics across the mentioned groups. The findings indicated statistically significant differences in respect of three out the four dimensions, that is Rational Knowledge, Spiritual Knowledge and Entropic Knowledge Dynamics. No significant differences were found in the case of Emotional Knowledge.

Focusing on the Rational Knowledge dimension, significant differences were retrieved among the groups of subjects - $F(3,398)=2.861$, $p<.05$. For instance, third-year students value rational thinking and decision-making most ($m=4.02$, $sd=0.63$), followed closely by master students ($m=3.98$, $sd=0.66$). Second-year students come forth as the least fond of using rational knowledge in their decisions ($m=3.77$, $sd=0.88$).

In what concerns the Spiritual Knowledge dimension, the results indicated the existence of meaningful differences, as well ($F(3,398)=11.325$, $p<.001$). At this level, the third-year and master cohorts reported the highest scores ($m=4.36$, $sd=0.58$, respectively $m=4.37$, $sd=0.49$) while the lowest score was retrieved in the case of second-year cohort ($m=3.86$, $sd=0.87$). This implies that the more experienced subjects value to a greater extent the influence of cultural values on making good decisions, the preservation of a positive
attitude when confronted with difficult tasks and the sharing of the same values with the team in solving collective-centric problems.

The same situation applies when analyzing the findings on the Entropic Knowledge Dynamics dimension ($F(3,398)=13.983$, $p<.001$) in that third-year and master students are at the forefront of transforming and integrating various knowledge fields in the decision-making processes ($m=4.01$, $sd=0.42$, respectively $m=3.98$, $sd=0.34$). Consistent with the results, these cohorts majorly appreciate the role of intuition on the emergence of multiple good ideas, using both emotions and cognitions in devising feasible solutions. At the same time, they extract relevant information from their own experiences when faced with new challenges and are willing to share the lessons learnt and best practices with their peers more than their younger counterparts. They are more open and eager to facilitate a positive climate when working in teams and accept the variety of the team members’ values.

By corroborating these considerations, it can be affirmed that the third hypothesis - H3: There are significant differences across the student cohorts according to the faculty year criterion – was partially confirmed through three out of the four knowledge dimensions.

Going beyond an incremental division of the respondents in terms of education level and faculty year, the fourth hypothesis of the study – H4: There are significant differences between the male and female students regarding the knowledge-based decision-making processes – is meant to address potential gender variations. In this vein, Independent-Sample T tests were performed to see whether there are meaningful differences on the four factors between males and females.

As the results posit, Sig.>0.05 for all four tests, therefore there are no statistically significant differences between the two categories. As a consequence, the fourth research hypothesis was not supported by the empirical data.

4. Conclusions, limitations and future research directions

Education emphasizes on rational decision making which means to consider knowledge as being rational and objective. Knowledge management theory and practice enlarged that vision by introducing tacit knowledge as a complementary component to explicit knowledge. The Nonakian knowledge dynamics capitalizes on that dyad composed of tacit and explicit knowledge and shows that decision making depends on both components. However, the fuzzy structure of tacit knowledge and its organizational stickiness makes difficult the analysis of decision making processes in terms of explicit and tacit knowledge.

This being the case, the present paper introduces the multifield theory of knowledge, based on the energy metaphor for knowledge. According to this new paradigm, knowledge is a spectrum of three fundamental fields: rational knowledge, emotional knowledge, and spiritual knowledge. These fields are interacting such that each form of knowledge from any given field can be transformed into another form of knowledge. In this novel conceptual framework, decision making is not a pure rational process but it is a result of contributions coming from rational knowledge, emotional knowledge and spiritual knowledge, as well as from the entropic dynamics of these fields of knowledge.

In order to test these ideas, a research has been designed to reveal the influence of different fields of knowledge and their entropic dynamics on the decision making process. The research is focused on investigating how people make decisions with respect to the factors mentioned above, by means of a questionnaire-based survey addressed to students in management and business administration from two important universities.

The exploratory investigation availed the answers to the research questions formulated at the beginning of the paper, namely: RQ1: Are there any differences in the capitalization of knowledge fields when people make decisions?; RQ2: To what extent is the entropic knowledge dynamics important to people when making decisions?; RQ3: Are the subjects’ socio-demographic characteristics relevant in the capitalization of knowledge fields when people make decisions? In line with the findings, there are differences among the importance attached to the four dimensions while the entropic knowledge dynamics – integrating active transformations and interactions between rational, emotional and spiritual knowledge – is most valued by the
questioned college students, be they undergraduates or graduates. Nevertheless, from a bird’s eye view, all the factors were deemed important as all the average means exceeded the neutral threshold (i.e., 3).

Further, the analysis brought to the fore the fact that neither the education level (undergraduate versus graduate), nor gender account for statistically significant differences among the student cohorts. The situation is different when shifting the attention towards a new criterion, namely the faculty year. The application of the One-Way ANOVA test highlighted supported the existence of meaningful differences among the groups regarding the knowledge fields and dynamics, with the exception of the Emotional knowledge dimension. At this level, third-year and master students value the rest of the considered dimensions more than their counterparts. That being the case, at a broader level, the study brings forward evidence in favor of the multifield theory of organizational knowledge, that is, the fundamental fields of knowledge are in a continuous interaction, and knowledge from each field can be transformed into knowledge of any other field. Linking the findings with the decision making process in the case of students, it becomes clear that most decisions result from the conversion and blending of two or more knowledge types. Consequently, pointing to one-dimension knowledge (i.e. rational knowledge) in the equation of good decisions is not a pertinent approach anymore.

As any other study, the present one has several limitations which should be thoroughly addressed in future research undertakings.

The first limitation refers to the sample structure which includes students from only two programmes of study (i.e., management and business administration) and from two Romanian universities. Further investigations on different samples (i.e., managers, entrepreneurs, etc.) would yield overall benefits and may reveal new aspects which could not stem from students’ ratings. For instance, in a very competitive business environment, decision making is always under a huge time pressure and the entropic knowledge dynamics may play an even more important role.

The second limitation is linked to the mainly exploratory nature of the current research. In this sense, new and more complex analyses are necessary to reveal the influence of knowledge dynamics on the decision-making process. For example, the advancement of a structural model assessing the relationships between the four knowledge dimensions and the inclusion of mediating factors as organizational culture or climate would provide cogent insights into the overall dynamics of the knowledge fields.

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Role of Trust in Integrative Negotiations

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Abstract: This paper discusses trust as a foundation for integrative negotiations, where strategy and information sharing play a critical role. In the increasingly global and interconnected economy, negotiation processes became a vital part in the political, social, economic and particularly business spheres, and have evolved over time. Building integrative negotiations relies on trust among the parties, affecting the process of information and knowledge sharing during the negotiation meetings. By presenting empirical findings, the purpose of the paper is to provide theoretical views and insights for further research, and practical implications for negotiators and professionals in general. Trust has emerged as an increasingly important intangible and intellectual relational asset in and between organizations, developed and sustained in interaction between people. Trust forms a foundation for collaboration and co-operation in and between organizations. The research questions are: i) what role does trust/distrust play in integrative negotiations; ii) how trust/distrust manifest during the negotiation meetings; iii) how trust and negotiation strategy affect information sharing in integrative negotiations. Empirical findings are presented based on qualitative data from two cross-cultural case studies related to negotiation processes in different contexts - international trade at the governmental level, and contract negotiation within a private enterprise - implying four countries in Latin America, Asia and Europe.

Keywords: culture, information sharing, integrative negotiation, knowledge, negotiation meeting, mutually beneficial agreement, psychological capital, strategy, trust.

1. Introduction

Global economy laid to an intensification of worldwide relations (Giddens, 1990); a complex set of interconnectivities and interdependencies (Robertson, 1992) with an increasing number of actors vying to influence the outcome of these relationships (Saner and Yiu, n.d.). Globalization has transformed the international relationships, affecting the economic, social and political spheres. In the economic field it has meant a growing approach, not only between governments to eliminate obstacles to international trade and investment, but also within and between organizations and economic agents involved in business relations. In this increasingly global and interconnected economy, negotiation processes became a vital part in the political, social, economic, and particularly business spheres, and they have evolved over time (López-Fresno, Miranda and Savolainen, 2017). In this context, trust has emerged as an increasingly important intangible and intellectual relational asset in and between organizations. It is developed and sustained in interaction between people, and plays an important role in negotiations.

A negotiation is a process of communication between two or more parties that promotes mutual interests and reduces differences, whose goal is to reach an agreement based on different needs and approaches (Llamazares, 2011, p.7). Parties engage in a negotiation because they have each decided that they are dependent on the other to provide something that will improve their current situation and enable them to negotiate successfully (Lewicki and Polin, 2013). During the process, explicit proposals are put forward ostensibly for the purpose of reaching agreement on an exchange, or on the realization of, a common interest where conflicting interests are present (Iklé, 1964). Furthermore, it is also a process in which divergent values are combined into an agreed decision, and it is based on the idea that there are appropriate stages, sequences, behaviours and tactics that can be identified and used to improve the conduct of negotiations and to increase the chances of success (Zartman and Berman, 1982). A negotiation takes place through proposals and counterproposals, whose objective is to reach an agreement. The focus of integrative negotiations is that the agreement has to be fair and positive for both parties, in a way that both are satisfied because the set objectives have been achieved. In addition, they create a climate of trust that opens the door to future relationships.
International trade negotiations are meant to boost trade and economic activity by reducing, or even removing, barriers to trade across international borders. Free Trade Agreements (FTA), either bilateral, multilateral or regional are reciprocal agreements between two or more partners, a key fixture in international trade relations. The number of them increased significantly in the last years. Considering only the Regional FTA, they increased significantly from 50 enforced agreements (less than 100 in force and inactive) in 1990 to 445 (659 in force and inactive) reported by the World Trade Organization (WTO) in June 2017 (WTO, 2017). An indicator that the world is becoming increasingly interconnected and interdependent.

International trade negotiations between governments for bilateral, regional and multilateral FTA involve complex and long processes, that include a range of players and parties, being trade ministries or departments within national governments the primary actors (Crump, 2013). These negotiations can take at least one year, where the negotiation teams prepare, plan and study their own and counterpart’s needs, interests and goals, to reach an agreement. Each negotiation team designs a trade negotiation framework, that responds to a general strategy that will lead to a specific type of negotiation, being more distributive (lose-win) or integrative (win-win). A well-constructed strategy is necessary to advance and achieve good results, and it will be later deployed and put in place during the negotiation meetings. Each of the areas to be negotiated - customs, market access and rules of origin, among others - will be represented by a technical negotiation group. The length of the negotiation process, the type of the strategy and even how the negotiation team is constituted and leaded, depend on the national culture of the countries taking part of the negotiation.

Preparing for an international negotiation requires good understanding of cultural, political, economic and linguistic differences that could influence the process (Mahoney and Chi, 2001). Diversity, in its broadest and integrative sense, needs to be considered and properly managed, in order to succeed. Sensitivity to, and information and knowledge about this diversity constitute crucial abilities and competences to be considered, for good understanding. An aspect that is directly related to the psychological capital of the negotiators, constituted by four elements: self-efficacy, optimism, hope and resilience (Çavus and Gökçen, 2014).

Language and culture become very important factors that determine effective communication and a fluent exchange of information for positive results. Ignorance or prejudices are two mistakes that negotiators should avoid. Stereotypes condition the attitude, form, style and results of a negotiation. Current theory and research in cultural psychology distinguish three different types of culture: dignity, face and honour (Aslani et al., 2013, 2016), as opposed to the dichotomy of independent/interdependent or West/East. They complement the perspective of low context and high context cultures in terms of communication (Hall, 1976), and provide a strong basis for reorganizing the general thinking about culture, negotiation strategy and joint gains.

Successful negotiations in any sphere are integrative, characterized by bringing together objectives and goals in a collaborative manner. Three elements constitute the pillars of integrative negotiations: strategy, technical knowledge on the areas to be negotiated, and psychological capital of the negotiators. These three elements will lead to higher or lower grade of trust, an ingredient needed for a successful negotiation under an integrative point of view.

2. Theoretical discussion

2.1 Trust

Trust describes the positive expectations of a person in relation to another’s behaving respectfully also in situations of risk, which is at the core in negotiations. Rousseau et al. (1998) depict that in definition of trust there is a cross-disciplinary agreement around the notions of “confident expectations and a willingness to be vulnerable”. The latter includes cognitive, affective and behavioral components of trust (Lewicki and Saunders, 1998). Making oneself vulnerable entails taking a risk and implies that there is something of importance to be lost (Mayer et al., 1995). There are different types of trust: deterrence-based trust, calculus-based trust, knowledge-based trust and identification-based trust which may have influence on integrative negotiations in the sense that the ‘highest’ type may be difficult to reach (Lewicki and Polin, 2013).

The trust concept refers to its nature as something intangible and a fragile resource and asset that implies human and relational aspects of trust (Savolainen and López-Fresno, 2013; Savolainen et al., 2017). To understand the role and nature of trust in negotiations, risk taking is an essential element in trust formation due to interdependence, perceived uncertainty, situational complexity and dynamics of trust development.
(Ferrin et al., 2011; Savolainen et al., 2017). Power relations make trust formation more complex and fragile, and even more so when cultural differences are involved (Savolainen and Ikonen, 2015). Thus, trust is dynamic and complex, involving cultural and other contextual issues, such as language and politics.

Trust building comprises frequent communication and information sharing (Burke et al., 2007). Intra-organizational relationships such as culture and leadership form an essential, even crucial part, of the negotiation process, extending beyond organization boundaries to external partnerships. Accordingly, that has reciprocal impact on the functioning external and internal relationships between negotiators and within their organizations (Savolainen, 2010).

2.2 Trust and negotiations

Trust plays an important role in negotiations. It is recognized as essential element for negotiation success by both academia and practitioners (Ferrin et al., 2011; Kong et al., 2014; Lewicki and Polin, 2013). Trust and its development in integrative negotiations can be seen as a cross- or multi-level dynamic inter-personal and inter-organizational process between parties, based on interaction between individuals, groups, and organizations. In managing multiple negotiation relationships, trust is a concern of both intra- and inter-organizational issues, as it forms an essential part of external and internal organizational social systems. Trust drives or may hinder collaborative, trustful interactions within and between individuals and groups in negotiations. When parties operate in the actual relational and cooperation situations, trust relates keenly to individuals and inter-personal relationships between parties. Both intra- and inter-organizational levels relationships play their part (Savolainen, 2010).

In contractual relations, trust has raised more attention lately when complex business relationships and networks develop and are managed more extensively technology-mediated. In contract practices, and especially when suspicions (distrust) arise, there is also space and freedom for the parties to decide how to negotiate and draft contracts. Trust building forms a useful skill to advance flexible contracting in integrative negotiations, advocating a balance between control vs. freedom and flexibility. These may decrease tensions emerging between a “controlling” role of contracts, and a flexible, relation-based “balancing” role of trust (Savolainen and Ikonen, 2015).

On one hand, trust is a foundation for and facilitates collaboration (De Dreu et al., 2006) leading negotiators to avoid impasses and reach more integrative agreements (Bazerman and Neale, 1992; Ferrin et al., 2011; Kong et al., 2014; Thompson, Wang and Gunia, 2010). On the other hand, interpersonal trust is fragile and, hence, difficult to build and maintain (Kramer and Lewicki, 2010; Williams and Belkin, 2016), and challenging to restore after violation (Ikonen et al., 2015, Savolainen et al., 2017). Trust development is especially complex and risky in the zero-acquaintance, initial trust contexts (cf. Belkin and Rothman, 2017). Negotiating parties are interdependent but humanly and naturally thinking, not fully predictable or controllable (cf. Mayer et al., 1995).

As negotiations are interdependent in nature, trust or distrust may exist, as in any interdependent relationship. Mistrust may develop in negotiations, which is unbeneﬁcial for the outcomes (Gunia et al., 2014; Lewicki and Polin, 2013). When there is no prior history in interpersonal interactions, and information available about the other party is limited, negotiators are often forced to rely on available cues to determine whether someone is trustworthy or not, which means risk taking (Borkenau and Liebler, 1992; Fehr and Geachter, 2000; Fiske et al., 2002; Sinaceur et al., 2013). Emotions may then also come into scene. Emotional expressions signiﬁcantly inﬂuence on the perceptions of partners’ sociability, morality and competence, being important predictors of trust and partner trustworthiness (Mayer et al., 1995; Belkin and Rothman, 2017).

Culture is currently drawing more attention moderating the trust level parties enter into a negotiation process. Culture is highly relevant in building inter-organizational trust. The growing negotiation activity due to globalization and networking has stimulated studies of cultural impact on trust in collaborative contexts. Researchers have generally found that inter-organizational trust differs in quality and quantity across cultures (Fulmer and Gelfand, 2012). Westerners, for example, tend to presume that the other will be trustworthy, while other cultures (e.g. East and South Asian) tend to initially trust less (Lewicki and Polin, 2013) or may have initial suspicions. Naturally, cross-cultural differences and a lack of trust inhibit effective collaboration between local and international organizations and networks (Fang, 2011). When parties trust each other in negotiations, the exchange of information tends to be more open and fluent, timely, and with correct amount of
information shared. The backbone of interaction is that a possible concession is granted in a given time in order to receive a concession back.

A key cultural element that influence trust or distrust in a negotiation process is language. When there is no common language between the parties of a negotiation, besides difficulties of understanding, other situations could affect the negotiation outcomes, causing social implications. The command of the counterpart’s language in many cultures signifies understanding and immediate acceptance, developing trust. However, the use of a language or dialect that can be associated to specific region or social group might cause the opposite effect (Llamazares and Nieto, 2017).

2.3 Integrative negotiations

Since Walton and McKersie (1965) proposed to distinguish between distributive and integrative negotiations, many of those who study and teach negotiations, and who observe and advise negotiators, have been strongly influenced by the limitations and opportunities offered by each of the two types (Kersten, 2001). However, other theorists have mentioned that what is customary in a negotiation process is to adopting not one, but different type of negotiation, depending on the strategy and the evolution of the process. Thus ranging from integrative to distributive negotiations (Llamazares and Nieto, 2017).

Conventional wisdom cumulated over the years suggest that integrative negotiations allow for better and win-win solutions under a sustainable perspective (Pruitt et al., 1983; Sebenius, 1992; Lewicki and Saunders, 1999). In order to carry out an integrative process, the two parties must be motivated to think more as contributors than as competitors. However, many negotiations are more in line with a winner-loser approach, a bargaining stand of demands and concessions. That is, in a game of zero sum, in which everything that wins one part is lost by the other. This focus creates a climate of confrontation and distrust that eventually will become into a loser-loser relationship (Llamazares, 2011).

The goal of an integrative negotiation is to reach the best possible results for all the parties involved. In other words, to reach the best possible outcome or solution to a problem. Problem solving is employed to find a solution to the negotiation that is acceptable to all negotiation parties, and it involves identifying mutual interests and strategies for creating joint value (Koning and van Dijk, 2013).

To implement an integrative negotiation there must be a clear strategy focused in a winning-winning result and exchange of information between the parties, as a basis. This exchange of information, being in writing or in the negotiation meetings, will depend on the climate and level of trust between the parties (Lopez-Fresno and Savolainen, 2014). If this is difficult to achieve in local negotiations, it is much more so in international ones, in which the other parties may also have very different social and business practices, including different expectations or objectives and negotiation techniques. Also, international negotiations are affected by the concept of personal trust (eg. in some countries oral engagement is not considered relevant, while in others the basis of the agreement is oral and constitutes a personal commitment). If this is compounded by greater difficulties in obtaining reliable information, the existence, at least in the early negotiations, of a climate of mistrust is not easily overcome. Overcoming this obstacle is the challenge that international negotiators applying a win-win approach need to face.

Furthermore, when the negotiation teams sit at the negotiation table, an “arena” of global common understanding and trust should be already achieved, and the process and time to get it will depend on the country’s culture. The “encounter” is the time that, in the first meeting or in successive meetings, the parties use to know each other before starting to negotiate, since trust is an inherent part of the negotiation context. Trust is generated through the various stages of negotiation - contact, preparation, encounter, proposal, discussion and closure - although the “encounter” is a critical and determining stage of success or failure of the later stages.

3. Empirical study

3.1 Methodology

A qualitative research methodology was applied as the most appropriate method for the purpose of the study to gain a deeper understanding (Eriksson and Kovalainen, 2008; Marshall and Rossman, 2015) of the role of trust and trust development during the negotiation process. The research questions were: what role does
trust/distrust play in integrative negotiations; how trust manifests during the negotiation meetings, and how trust and strategy affect information sharing in integrative negotiations.

3.2 Data and analysis

The empirical research consisted of two complementary case studies: Case study 1 and Case study 2, following a multi-case study design (Yin, 2003) that involved four countries in Latin America, Asia and Europe (named A, B, C, D). The first Case study is related to international negotiations at the government level (negotiation of a FTA) and involved countries A and B. The second Case is related to negotiations at the organization level, private enterprise, and involved countries C and D. The objective of the research design was to cover public and private sector and several countries in different continents. In order to protect confidentiality and sensitiveness of information, the cases are numbered (1, 2) and the countries are named as A, B, C and D.

The qualitative data were gathered by auto-ethnographic and interview methods (Patton, 2015; Marshall and Rossman, 2015). Auto-ethnography was applied in both cases, and in Case 2 data was complemented through two interviews to the persons involved in the negotiation process representing the hiring enterprise.

Data were analyzed following an inductive process of analysis that considered the core strategies of qualitative inquiry indicated by Patton (2015, p.47): unique case orientation, inductive analysis and creative synthesis, holistic perspective, context sensitivity and reflexivity. Verbatim are used in Case 2 to illustrate analysis and results.

The aim of the Case study 1 was to increase understanding of cultural differences in international negotiations, and how strategy may affect trust and information sharing in integrative negotiations. The aim of the Case study 2 was to increase understanding of the role of trust and communication in negotiation processes.

3.2.1 Case study 1: Negotiation of an international trade agreement

Case study 1 is focused on a negotiation of a FTA between two countries, at the governmental level. Country A belongs to Latin America. Over the last 20 years it has experienced important economic transformations, where the negotiation of FTA has become a very important part of its foreign trade policy. Country B is an emerging economic superpower in Asia that since its accession to the WTO started negotiating FTA with different partners around the world.

Country A has wide experience in negotiating FTA with Latin America, North America and European countries, but none with Asian countries. Its negotiation team was formed by both senior and junior negotiators that spoke English. Country B has experience negotiating with South American, European and Asian countries and its negotiation team was composed of senior negotiators with acceptable command of English. Neither negotiation team had a wide knowledge of the others cultural and social characteristics.

In 2007, Country A established diplomatic relations with Country B, and both governments agreed to start the negotiation of an FTA. Therefore, each party started their own preparation process. In Country A, its first step was to select its negotiation team, and to prepare the negotiation strategy. First, Country A identified and analyzed main culture differences of Country B and their business conduct. Despite knowing that the negotiation team from Country B spoke English, the Country A Chief Negotiator considered that language could become an obstacle, and having a negotiation team that could understand the other’s language could be well received, since Asian countries highly value those who understand and have a good command of their language. Therefore, he took the decision to include at the table an Asian origin negotiator that spoke a similar dialect, as an asset for the team. An advantage not only strategically speaking –language wise-, but also to ease up the relationship with the counterpart, as well as to facilitate the flow of information, making the counterpart feel more comfortable and to generate a trustful climate.

However, the outcomes of the first encounter were not as successful as expected. By having an Asian looking person in the room, that seemed to understand the counterpart’s language, made them suspicious and distrusting. Country B negotiators were more preoccupied for finding out about this Asian looking person and not saying much among them, fearing their strategy to be revealed, than getting into the negotiation process itself or trying to understand the Country A position or needs. Thus, information sharing was not taking place and the negotiation was not advancing.
After two rounds of negotiations, and once the Country B team discovered that the Asian person on the other side of the table spoke a different dialect, negotiators felt more comfortable, since this person did not represent a menace to their strategy. On the other hand, Country A was able to learn that dialects within a language could cause doubt and misunderstanding. Therefore, an early identification of the problem provided the opportunity to correct mistakes. Necessary information started to flow more easily, they became more open to interact, and they were more concentrated in the process.

Building rapport with Asian negotiators takes time and trusting each other does not mean that all information would be shared. A negotiation strategy establishes what to tell and when; specific pieces of information along the process are expected to serve a purpose. But when distrust emerges that process can be blocked.

3.2.2 Case study 2: contract negotiation

Case study 2 is focused on a contract negotiation in the context of an international project. Three main actors were involved: i) contracting authority, at the project level; ii) hiring organization (consultancy firm that won the public tender for the project, private enterprise) from Country D, and iii) a professional to be hired, from Country C. Country C is a Mediterranean European Country; Country D is a Northern European Country.

After the resignation of the project team leader, a process was open for hiring a new team leader. The contracting authority requested the consultancy firm to assess if there was human capital internally in the project to be appointed as team leader, as the project was going through the most critical stage of implementation, and to hire an external person would imply risks and time. Five candidates were presented, and the evaluation committee (independent professionals, coordinated by the contracting authority, at the project level) chose a consultant who had been working for the project for two years, from Country C.

Since the beginning of the process, the candidate could perceive that the consultancy firm had no interest in him. During the whole process no any meeting was kept, no any personal phone call was made. In summary, there had not been a good “encounter” between the parties involved. He just received an email asking for his CV and some later emails with the contractual conditions, with no margin of negotiation, being a fully asymmetric negotiation.

When the contracting authority made the decision to appoint the candidate from Country C as the new team leader, the decision was communicated by the consultancy firm to the candidate in an email addressed to the whole team. An action that was interpreted by the candidate as a lack of respect towards him. At that moment not any contract proposal had been sent to him before, and contractual conditions were still pending, as those imposed by the hiring organization as a “non-negotiable contractual pack” had not been accepted by the candidate.

The situation led to a total break off in communication between the hiring organization and the candidate, now appointed team leader by the contracting authority. Trust breach (distrust) followed towards the hiring organization, not only by the appointed team leader still to be hired, but also by the internal and external stakeholders involved in the project. “It is not just a matter of salary, it is a matter of dignity; you are not respecting me”, the team leader to the hiring organization. That lack of communication and respect led to both parties to obstinate in their positions, based on stereotypes of “we know that people from country x” behave like that.

In that context, the contracting authority forced the main actors to find a quick solution. One of the top directors of the consultancy firm got in contact with the candidate through phone call. It was the first telephone call he received in months. “Let me tell you that the way you managed the situation was awful. Along this time I couldn’t find a single signal of respect towards me, and the only thing you did was to request me extra work even before the contract will be signed. Sorry to say you this, and with all my respects, but I fully distrust you”, the team leader to the hiring organization.

After that phone call, communication improved a bit, and two months later a manager from the consultancy firm visited the project. Personal face-to-face communication offered the possibility of speaking clearly, so to clarify some misunderstandings, and it laid the foundations to slowly restore relationships. “Communication failed since the beginning. Too many actors implied with partial information in all sides... that derived in assumptions by all actors... When you do not have communication everything is potentially misunderstood”,

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the manager from the consultancy firm said to the appointed team leader, in first meeting, as an answer to why they had arrived to that situation. “I lost any sign of trust on your organization, in the personal and professional sides. We need transparency and agreed objectives to build up trust, but it will take a time, a long time...”, the team leader to the person of the consultancy firm, during the first meeting.

That face-to-face meeting was critical to turn the situation around. In a single meeting trust cannot be regained, but the team leader felt better, his dignity recovered, as it became clear that there had been misunderstandings and entrenched positions. When communication improved, trust repair could begin, but it took a long time. After 3 years of close collaboration trust was recovered and even reinforced. However, cultural differences are important, especially those related to communication, having Country C a high context culture and Country D a low context culture, where attitudes and circumstances are very important as an element for good understanding.

3.2.3 Findings

Below are summarized and analyzed the main findings, following the research questions.

1. What role does trust/distrust play in integrative negotiations. In Case 1, a failed strategy generated distrust, and it did not facilitate the process. The mistake was corrected along the way and trust was regained, what led to a successful negotiation. The expected outcomes could be achieved and the FTA was signed. In Case 2, the negotiation was focused by the party with power (hiring organization) as asymmetric and distributive, leading to distrust and total break off in communication, that blocked the negotiation process. In both cases distrust affected the process of negotiation Trust turned out to be an essential element, as trust recovering became critical for the success of the negotiations.

2. How trust/distrust manifest during the negotiation meetings. In Case 1, distrust affected the process blocking information sharing during the negotiation process. In Case 2, distrust led to a total break off in communication and blocked the whole negotiation process. It was not restarted till a personal phone call between both parties in the negotiation process was made, and a face-to-face meeting followed.

3. How trust and negotiation strategy affect information sharing in integrative negotiations. In Case study 1, the strategy of Country A to include an Asian looking person in the negotiation team made the counterpart suspicious and distrusting. Negotiators were more preoccupied for finding out about that Asian looking person and not saying much among them, fearing their strategy to be revealed, than getting into the negotiation process itself or trying to understand the Country A position or needs. Thus, information sharing was not taking place and the negotiation was not advancing. In Case study 2, the negotiation strategy used by the counterpart from country D was fully asymmetric, based on his power, and the process was worsened by low communication and interaction skills, lack of sensitivity and ignorance of cultural differences and ridding in stereotypes. That led to a break of communication and the negotiation process was blocked till third parties had an intervention to recover it.

Based on the findings from the cases, the process of trust development in interpersonal interaction between individuals seems dynamic, occurring in several episodes and phases. The communication perceptions and experiences of the individuals influence on the intensity (pace and depth) and direction (forward or backward) of trust development process (cv. Savolainen and Ikonen, 2016). Trust and distrust may coexist without inevitably damaging the relation or the outcomes. Yet, the objective should be to avoid as many episodes of mistrust and trust breach as possible, since trust restoration takes time and energy (Ikonen et al., 2016). Development of the climate of trust is necessary from the beginning (encounter), even though confidence and trust are actively built or reinforced along the process, and the negotiation strategy plays a critical role in it.

4. Summary, conclusions and implications

This paper has discussed and studied the role of trust in integrative negotiations based on the qualitative data from two cross-cultural case studies pertaining to two different contexts - public sector, at the government level, and private sector – and four countries in different continents. The findings show that trust is an indispensable element for integrative negotiations. Trust manifests during the negotiation meetings in different ways, for example limiting or reducing information sharing (Case study 1) or breaking the whole
Cultural differences emerged and were essential in international negotiations, shown in both case studies. Deep knowledge and understanding of cultural, political, economic and linguistic differences turned out to influence the process. In both cases, a non-native language between the parties limited the communication process. Cognitive, affective and behavioral components in the process led in an active way to trust or developing distrust in interactive, virtual or in face-to-face, negotiation meetings. Thus, trust building is a purposive activity, not a relatively passive process where the parties/actors behave in a characteristically trustworthy manner. Power relations make trust more complex and fragile, and even more so when cultural differences are involved. If, or when, trust is broken, trust recovering or restoration takes time. When negotiations take over short periods of time, the coexistence of trust and distrust might be more difficult to manage since there is no time to regain confidence. Therefore, in these types of negotiations special attention should be paid to trust building. Open, fluent, honest and face-to-face communication play a key role in trust-building and restoring.

The important implication for negotiators and other professionals in the field is to consider and focus on trust as the outcome of a purposive activity, that is a foundation for integrative agreements. Moreover, strategy, technical knowledge, communication and relational competences and skills mediate trust building. A well-planned negotiation strategy can contribute to fostering trust and reaching a mutually beneficial agreement. Skills and competences of negotiators should include sensitivity and knowledge on cultural diversity, communication, social interaction and negotiation skills. An international negotiator has to be fully aware of particular cultural characteristics that could affect trust, and consequently a positive outcome of the process for the parts implied in the negotiation. When there is no common language between negotiators, besides difficulties of understanding, other situations that could affect the negotiation process arise, such as social implications.

As culture seems relevant for inter-organizational trust in the growing international networking, further research is needed especially on the emic perspective and of local practices which seem limitedly studied (Fulmer and Gelfand, 2012). Further empirical research in inter-cultural studies in different contexts (cross-national, cross-sectorial) would enrich the knowledge on trust development and the role it plays in integrative negotiations. Finally, relations between trust, power and gender in negotiations would deserve more consideration in future research. For example, research on triage power in negotiations is limited.

References


Effect of Trust and Perceived Reciprocal Benefit on Students’ Knowledge Sharing via Facebook and Academic Performance

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Abstract: This paper explored the effect of trust and perceived reciprocal benefit on students’ knowledge sharing via Facebook and on students’ academic performance and reputation. The research model was tested using 170 undergraduate students in Malaysia via structural equation modeling. The results show that trust and perceived reciprocal benefit are two strong predictors of knowledge sharing amongst students, which affects their academic performance and recognition. Students with high levels of altruism are more open to sharing knowledge without preconditions compared to those with lower levels of altruism. The findings of this research would help educational institutions use Facebook as a knowledge sharing platform and also convert their academic procedures to an e-learning environment with Facebook as its platform. Creating a virtual environment and facilitating knowledge sharing among students will encourage a more productive and constructive learning environment. Facebook groups are regarded as an online community that increase students’ interaction, collaboration, and trust.

Keywords: Facebook, Knowledge Sharing, Trust, Academic Performance, Perceived Reciprocal Benefit

1. Introduction

Knowledge sharing is defined as the interchange of knowledge between individuals and organizational units, groups, and the organization itself (Paulin and Suneson, 2012). It can also be referred to as trading knowledge between individuals (Paulin and Suneson, 2012). Recently, the development of social media and social network services (SNSs) have redefined communications and knowledge sharing in cyber-space (Nguyen et al., 2013; Choi and Scott, 2013). New media platform could change the flow of information and transform communication processes (Ou et al., 2016). Social network sites have become increasingly popular with the rise of Web 2.0, due to increased collaboration and sharing between users via applications such as wikis, blogs, podcasts, and RSS feeds. SNS creates a sense of community, where members feel involved and try to develop relationships, socialize, and interact with each other, which facilitates the flow of information and knowledge sharing (Choi and Scott, 2013). Taking this into account, several organizations such as IBM and Starbucks have begun utilizing SNS for networking and collaboration (Choi and Scott, 2013). Frequent exchange of information and knowledge via SNS has dramatically changed a person’s lifestyle and enhanced individual and organizational learnings (Chen and Hung, 2010). However, what will prompt individuals to share knowledge is an important question that many researchers are trying to answer. Many organization are experimenting with ways of getting people to share knowledge (Gaál et al., 2015). Academic institutions are also trying to encourage knowledge sharing amongst their staff as well as students.

Many researchers investigated the determinants of knowledge sharing in different contexts and cultures (Coldwell et al., 2008; Graff, 2006; Zaqout and Abbas, 2012). Knowledge sharing among university students has been recognized as an important and interesting area of study in academia. Academic managers and lecturers in universities used SNS, especially Facebook, as a tool to communicate with students and share academic information. Irwin et al. (2010) investigated the use of Facebook pages (course-specific) and its efficiency as a course learning tool, and highlighted the fact that Facebook can be a complementary e-learning tool for teaching. Other studies such as Moghavvemi and Janatabadi (2017), Rouis (2012), and Rouis et al. (2011) underlined the effect of using Facebook on students’ academic performance, while researchers such as Valenzuela et al. (2009) investigated the effect of using Facebook on students’ life satisfaction and social trust.
Most of these studies show that SNS brought about a tremendous change in the way students interact and share information and knowledge (Kaeomanee et al., 2015). Morallo (2013) and Khan et al. (2014) reported that Facebook can be an ideal platform for knowledge sharing among educators, teachers, and students, because they could upload/download lecture notes and obtain up-to-date information on the class. Many students use Facebook to pose questions to their peers and sharing knowledge (Lampe et al., 2011). However, factors that determine whether or not students will share knowledge or information via Facebook has yet to be investigated. Social network researchers argued that trust could affect the capability to share knowledge sharing, and its lack thereof might limit knowledge sharing (Lewis, 2003). Other researchers believed that benefit expectancy of a future request will affect knowledge sharing in current contributions (He and Wei, 2009; Kankanhalli et al., 2005), therefore, many researchers used the social exchange theory to investigate individuals’ knowledge-sharing behavior (Blau, 1964; Bock et al., 2005; Kankanhalli et al., 2005; Papadopoulos et al., 2013). According to this theory, individuals regulate their interactions with others based on a self-interest analysis of costs and benefits.

The main question of this research is what are the factors that encourage students to share knowledge via Facebook? The main aim of this study is to examine the effect of trust and perceived benefit on students’ knowledge sharing via Facebook and on students’ academic performance and recognition. The intention of being collaborative and enjoying mutual benefits may encourage students to share knowledge. When students share their knowledge with others, they will experience personal satisfaction, appreciation by their peers, and the attainment of a general acknowledgement and confirmation that they possess positive attitude towards the academic field. We argue that creating an online community via Facebook will increase students’ communication, collaboration, interaction, and trust, all of which will influence their knowledge sharing and affect the academic performance and recognition amongst students and instructor. This argument is based on previous researches, which proved that strong communal feelings will increase the flow of information among learners, cooperation among members, availability of support, commitment to group goals, and satisfaction with group efforts (Rovai, 2002). The paper is organized in the following order. Section 2 reviews the literature on knowledge sharing, development of research model and the related hypothesis. Section 3 details the research method employed in this study. Section 4 presents the results and discuss the findings of the study. Finally, Section 5 concludes this work.

2. Background of the study

Knowledge sharing behavior refers to the dissemination of acquired knowledge to other members within an organization (Ryu et al., 2003; Sucayah et al., 2016). According to Wang and Noe (2010), knowledge sharing refers to “the provision of task information and know-how to help others and to collaborate with others to solve problems, develop new ideas, or implement policies or procedures”. Many researchers described alternate perspectives of knowledge sharing (e.g., Bock et al., 2005; Kankanhalli et al., 2005; Papadopoulos et al., 2013). Most discussed the necessities, benefits, and contents of knowledge sharing. For example, Khyzer et al. (2009) deduced that trust, perceptions, and willingness to share influence students’ attitude toward knowledge sharing, while Liang et al. (2008) pointed out that individuals could build social relationships with others by sharing knowledge in order to maximize gains. In the same vein, Molm (2001) indicated that people seek to maximize benefits and minimize costs when exchanging resources. Wangpipatwong (2009) conducted a study on university students in Bangkok, and reported that technology support, students’ ability to share, and degree of competition with classmates had significantly influenced knowledge sharing behavior. Riege (2005) categorized the factors influencing knowledge sharing into three main elements; individual factors (e.g., trust, power, and leadership), organizational factors (e.g., social network, reward system, and sharing opportunities), and technological factors (e.g., information technology systems and member training). Other researchers confirmed that there are numerous intangible benefits that individuals could gain from sharing knowledge, such as becoming visible (Butler et al., 2002), enhancing reputation (He and Wei, 2009; Wasko and Faraj, 2005), intensifying peer recognition (Carrillo and Gaimon, 2004), earning respect (Constant et al., 1994), obtaining a better image (Constant, et al., 1996), and strengthening the sense of self-worth (Bock et al., 2005). These benefits are not only tangible, since individuals may engage in an interaction with the expectation of reciprocity (Gouldner, 1960). In such exchanges, people help others with the general expectation of future returns.
2.1 Development of Research Model

Taking into account previous researches and in order to explore the knowledge sharing behavior in social networks, we used the social exchange theory to conceptualize a research model in the context of Facebook. We hypothesize that students will share knowledge if they trust other members and if they could benefit from it in the near future. We suggest that students’ knowledge sharing behavior will affect their academic performance and recognition. Trust and perceived reciprocal benefit are considered independent variables that affect students’ knowledge sharing via Facebook groups, which in turn affect the recognition and students’ academic performance (see Figure 1). Altruism is a moderating factor on the relationship between perceived reciprocal benefit and knowledge sharing, which measure students’ unconditional kindness without pre-conditions. The following section discusses and developed hypotheses based on this argument.

2.1.1 Knowledge sharing on Social Network Sites

Previous researches on Facebook observed its educational value (Jong et al., 2014; Mazman and Usluel, 2010, Moghavvemi et al., 2017b), explored its use for the purpose of teaching and learning (Wang et al., 2012), and investigated the perspective of academic collaboration on Facebook (Khan et al., 2014). Pi et al. (2013) found that members on Facebook Groups would be obliged to share knowledge when they expect to experience sharing or mutual benefits. When members on Facebook groups experience being treated without any bias and when the environment encourages knowledge sharing, they would be obliged to share knowledge, and would expect the same from other group members (Pi et al., 2013). Members on Facebook Groups tend to exchange information and knowledge in a virtual community environment (Pi et al., 2013). Facebook groups can be regarded as an online community, since group members feel that they belong, participate together in discussion, and share certain practices. McMillan and Chavis (1986) define community as “a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members’ needs will be met through their commitment to be together” (p. 9).

On the other hand, Pi et al. (2013) also pointed out that reputation on Facebook groups would strongly affect the members’ attitude in whether or not they want to engage in knowledge sharing activities. These members assume that participating and engaging in Facebook groups could elevate their reputation and status (Pi et al., 2013). Members on Facebook groups enjoy sharing knowledge when they are able to benefit from lending a helping hand to others (Pi, et al., 2013). Enhancing relationships with others could be another reason, since the study shows that employees would be inclined to engage in knowledge sharing if they believe that it could enhance their relationship with others (Bock and Kim, 2001). Moghavvemi et al. (2017a) highlighted the fact that outcome expectation, perceived reciprocal benefit, and perceived enjoyment are the main factors affecting students sharing knowledge via Facebook groups.

2.1.2 Trust

Previous researches defined trust differently. Sharratt and Usoro (2003) considered trust as important facilitator in communication. Mayer et al. (1995) suggested that ability, benevolence, and integrity are the basic factors that underlie trust, while Tinsley (1996) argued that integrity and benevolence should be separated from ability and combined with other ethical factors as a base of ethically based concept of trust. Chen and Hung (2013) adopted Mayer et al. (1995) definition of trust, suggesting that “interpersonal trust in others’ abilities, benevolence, and integrity increases the desire to give and receive information, resulting in improved performance of distributed groups; which creates and maintains exchange relationship” (page 228). Trust plays a major role in knowledge sharing initiatives and in diffusing knowledge (Shapin, 1988) transfer, and exchanging information (Czerwinski and Larson, 2002) in the virtual world (Xiao et al., 2012). Trust has been recognized as an important antecedent of group performance, intellectual capital exchange, and knowledge sharing in virtual communities (Ridings et al., 2002). Khyzer, et al. (2009) deduced that trust, perceptions, and willingness to share influences online participants’ attitude toward knowledge sharing. This happens because when a relationship is established based on trust, people in that relationship are more willing to participate in cooperative interaction (Nahapiet and Ghoshal, 1998). The online socio-emotional interaction increases trust relation between community members by improving the group members’ emotional closeness, which further stimulates knowledge exchange behavior between members of the virtual community (Xiao et al., 2012). Therefore, trust appears to be an important factor in building positive interpersonal relationships, which encourages knowledge sharing (Jer Yuen and Majid, 2007; Van Alstyne, 2005). Chen et al. (2014) depicted that community trust is an essential factor that influences a persons’ intention to share knowledge, which can lead to elevating knowledge sharing behavior. Based on previous researches (McLeod, 2008;
Nonaka, 1994; Shapin, 1988), we used Chen and Huang (2010) definition of interpersonal trust and assumed a positive relationship between university students’ knowledge sharing intention and the level of interpersonal trust (McLeod, 2008; Nonaka, 1994; Shapin, 1988). We expect that students’ level of trust will increase their knowledge sharing behavior on Facebook groups. The following hypothesis is formulated based on this assumptions:

H1: Trust will positively affect students’ knowledge sharing behavior via Facebook.

2.1.3 Perceived reciprocal benefit

Expected reciprocal benefits in the context of knowledge sharing is defined as the degree to which a person believes they could obtain mutual benefits via knowledge sharing (Hsu and Lin, 2008). According to Davenport and Prusak (1998), peoples’ time, energy, and knowledge are limited. Therefore, except when it is profitable, people are usually unwilling to share scarce resources with others. In order to contribute knowledge, individuals must believe that their contribution is worth the effort. Reciprocity is a form of conditional gain; that is, people expect future benefits from their present actions. This means that a behavior is undertaken in response to previously friendly actions (Fehr and Gächter, 2000). Many studies detailed analyses of reciprocity, and confirmed that it can benefit knowledge contributors because they anticipate future help from others (Connolly and Thorn, 1990; Kollock, 1999). The norm of reciprocity Gouldner (1960) makes two minimal demands: (1) people should help those who have helped them, and (2) people should not harm those who have helped them. In a team environment, people who anticipate and are more willing to share their ideas also expect others to do the same. Thus, people who expect reciprocity will share more ideas, their ideas will be more useful and creative, and their satisfaction will increase. People share knowledge with their colleagues as they develop relationships with them and anticipate receiving knowledge in the future. Wasko and Faraj (2005) argued that knowledge sharing in online communities is facilitated by a strong sense of reciprocity. Furthermore, researchers have observed that reciprocal benefits can provide an effective motivation to facilitate knowledge sharing, thus achieving long-term mutual cooperation (Bock et al., 2005; Kankanhalli et al., 2005). Thus, if individuals believe they can obtain reciprocal benefits from colleagues by sharing knowledge, they are more likely to view knowledge sharing favorably, thus having higher knowledge sharing intentions (Lin, 2007, Moghavvemi et al., 2015). Therefore, we hypothesize that:

H2: Perceived reciprocal benefit will positively affect students’ knowledge sharing behavior via Facebook.

2.1.4 Altruism

Altruism can be seen as a form of unconditional kindness without the expectation of a return (Fehr and Gächter, 2000), where an individual provides help and achieves a sense of satisfaction from an action (Kollock, 1999). Altruism is derived from the intrinsic enjoyment of helping others (Jeon et al., 2011; Kankanhalli et al., 2005). In other words, it can be defined as the willingness to help others without anything in return (Hsu and Lin, 2008). Previous studies have confirmed the positive relationship between altruism and knowledge contribution (Davenport and Prusak, 1998; Wasko and Faraj, 2005) and quality and quantity of knowledge sharing (Sedighi et al., 2016). For instance, He and Wei (2009) suggested that knowledge workers contribute knowledge to the Knowledge Management System (KMS) due to their enjoyment in helping others. Altruism plays an important role between an individuals’ intention to share knowledge (Chen et al., 2014). Lin (2007) suggested that the act of helping others (altruism) could be a strong influence on a persons’ knowledge sharing behavior. De Vries et al. (2006) suggested that willingness to share knowledge is a form of altruism that indicates a positive attitude towards other members in the team and the willingness to reply to colleagues. Therefore, we hypothesize that:

H2a: Altruism moderates the relationship of perceived reciprocal benefit towards students’ knowledge sharing behavior via Facebook

2.1.5 Reputation / Recognition

A good reputation carries significant mental or physical pleasure and privileges in society (Yan et al., 2016). Research confirmed that people contribute knowledge when they think that their professional reputations will improve (Wasko and Faraj, 2005). Hsu and Lin (2008) defined reputation as a degree to which a person believes that knowledge sharing could enhance personal reputation. Wasko and Faraj (2005) confirmed that reputation, which is a type of social benefit, is a perceived value derived from knowledge sharing in social networks. Wasko and Faraj (2005) suggested that individuals contribute knowledge in electronic networks of
practice with expectations of improved status and reputation. O'Dell, et al. (1998) suggested that employees share their best practices due to their expectation of recognition by experts and employees. When members feel they are identifiable and that others know who they are, they are motivated to build and maintain their "reputation" in a virtual community (Morio and Buchholz, 2009). Chennamaneni (2006) reported that employees' belief that sharing knowledge will enhance their reputation and position in the job is an important motivator/facilitator for sharing valuable knowledge. If participants believe that they would receive intrinsic benefits such as self-satisfaction, social recognition, or power, then they would also derive pleasure from knowledge sharing (Kankanahalli et al., 2005). Knowledge contributors can benefit from improved self-concept when they contribute knowledge (Hall, 2001). Taking into account previous works, this study hypothesized that knowledge sharing will affect students' recognition/reputation between members and instructors.

H3: Students’ knowledge sharing behavior positively affect reputation.

2.1.6 Academic Performance

Previous researches showed that knowledge sharing leads to better team performance, due to improved decision making, better problem solving, and enhanced creativity (Huang, 2009; Nonaka and Takeuchi, 1995). Nelson and Cooprider (1996) noted that the absence of shared knowledge may lead to poor group performance, while the presence of such a shared perception could lead to better performance. Psychological literature provides many theoretical explanations based on the assumption that when a group is exposed to more information, the performance will improve (Huang, 2009). Moye et al. (2005) found that information sharing can reduce both task and relationship conflict with beneficial effects on team performance. Increased knowledge sharing helps participants consider more options, learn from the experiences of others, and better utilize the knowledge, all of which leads to improved performance (Huang, 2009). Majid and Wey (2009) suggested that online collaboration tools help students learn and share knowledge, as well as improve their academic performance. Therefore, this study hypothesizes that knowledge sharing will affect students' academic performance (Figure 1):

H4: Students' knowledge sharing behavior has a positive effect towards their academic performance.

Figure 1: Research Framework

3. Methodology

3.1 Sample and procedure

The sampling frame is made up of 170 undergraduate students in a business statistics class in University of Malaya, Malaysia. The data collection took place from the beginning of September 2016 to the end of December 2016 (one semester). The Facebook group (online community) was created for students taking the business statistic course to help the use e-Learning material and provide a reliable platform for them to obtain and share information pertaining to the course. The lecturer uploaded materials relevant to the course, and suggested that the students share information with other members if they feel obliged to do so. All of the students had requested to be a member of the Facebook group (it was optional), and began asking questions and chatting with each other and the instructor online. They started sharing information related to the class and assignments while also uploading other course related information. They answered each other’s questions related to the assignment, exam, lecture notes, and helped each other answer tutorial questions and assignments.

3.2 Research Instrument

This study uses the original validated scales, which was adopted into the context of e-Learning and social network. The items used to measure trust was adopted from Chen and Hung (2010), Chow and Chan (2008)
and Palvia (2009). Perceived reciprocal benefit was adopted from Chen and Hung (2010) and Lin (2007), while knowledge sharing was adopted from Staples, et al. (1998) and Davenport and Prusak (1998). Recognition/reputation was adopted from Kankanhalli, et al. (2005) and Compeau et al. (1999), while academic performance was adopted from Wohn and LaRose (2014). Academic performance was tested through self-reported measures, since most of the students did not answer question related to their cumulative grade point average (CGPA). Altruism was adopted from Rushton et al. (1981) and Lee et al. (2011). The seven-point Likert-type scale, ranged from 1 (strongly agree) to 7 (strongly disagree), asked respondents to rate their perception about the factors affecting knowledge sharing and their expectations from sharing knowledge. In the beginning of the questionnaire we asked them about the frequency of using Facebook group and their post and comments and the results presented in the data analysis section. The pre-tests were designed and developed to ensure that the measures used were logically consistent, complete, and valid. The measurements were tested by giving the questionnaires to a sample of ten students to evaluate their reaction to the items and ease of answerability and minor changed done after their comments. The pilot test among 30 respondents revealed that the Cronbach alpha for all the construct exceeded the acceptable range of 0.7.

4. Data Analysis and results

The research model was tested and the data sets checked for missing data, outliers, normality, and reliability. The majority of the students (80%) were third year students in accounting, management, and finance. 43.2% of the respondents were males, while 56.2% were females. The average age of the respondents was ~22 years old. ~20% of the members’ commented and shared extra information (uploaded some video, notes), while ~15% answered questions from other students and tried to help. They answered other students’ questions, shared lecture notes and extra information related to assignments and exams in the Facebook group while updating each other on news related to group activity and campus news. 20% watched and read and Like the shared documents. 45% just watched and read them without taking any action. The results of reliability test for all of the variables were high and exceeded the acceptable point of 0.7 (see Appendix A). The data was tested through a structural equation modelling using AMOS 18. AMOS is statistical software that is able to graphically draw models. We ran the confirmatory factor analysis to confirm the adequacy of the underlying variables in our new context (Malaysia), while we ran the structural model to determine the relationship between independent and dependent variable, and tested the hypotheses. The discriminant and convergent validity were examined through a confirmatory factor analysis (see Table 1). There are two common ways used by researchers to evaluate and validate the measurement model. First is testing each construct separately, second is testing all constructs together in one measurement model (Woo et al., 2009). Testing all constructs at once is preferable than testing each construct separately because it allows us to take into account the relationships between the indicators of different constructs (Woo et al., 2009). We ran all of the constructs in one measurement model, and the results indicated that standardized (regression) parameter estimations were higher than 0.70, while the composite reliabilities exceeded 0.80 (see Table 1), which supported the assumptions of internal consistency and reliability of the measurement model. Convergent validity was also assessed using average variance extracted (AVE), and the results revealed that the AVE for all constructs was equal to or greater than 0.50 (see Table 1).

The results of the measurement model suggested a good fit since all the fit indices was within the acceptable range (CMIN/DF = 1.793, goodness of-fit index [GOF] = 0.847; comparative fit index [CFI] = 0.923; Tucker–Lewis index [TLI] = 0.906; incremental fit index [IFI] = 0.924; root mean square error of approximation [RMSEA] = 0.072) (see Appendix B for the Benchmark for Model Fit Indices). Therefore, we can check the hypothesis and relationship among the independent and dependent variables via the structural model.

Table 1: Composite Reliability, Average Variance Extracted, Correlation

<table>
<thead>
<tr>
<th>Construct</th>
<th>CR</th>
<th>AVE</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived reciprocal benefit</td>
<td>0.812</td>
<td>0.550</td>
<td>0.741</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td>0.723</td>
<td>0.505</td>
<td>0.244</td>
<td>0.710</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge sharing</td>
<td>0.736</td>
<td>0.690</td>
<td>0.243</td>
<td>0.492</td>
<td>0.830</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recognition (reputation)</td>
<td>0.886</td>
<td>0.813</td>
<td>0.285</td>
<td>0.413</td>
<td>0.517</td>
<td>0.901</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Academic Performance</td>
<td>0.887</td>
<td>0.780</td>
<td>0.319</td>
<td>0.495</td>
<td>0.523</td>
<td>0.678</td>
<td>0.883</td>
<td></td>
</tr>
<tr>
<td>Altruism</td>
<td>0.799</td>
<td>0.661</td>
<td>0.098</td>
<td>0.149</td>
<td>0.217</td>
<td>0.132</td>
<td>0.176</td>
<td>0.813</td>
</tr>
</tbody>
</table>

Notes: values on diagonal are square root of AVE, CR= Composite reliability, *: p<.05; **: p<.01.
4.1 Testing the hypotheses

The results confirmed that the structural model achieved a good level of fit (i.e., $\chi^2 = 484.153$, $\chi^2/df = 1.841$, goodness of-fit index (GOF) = 0.803, Tucker–Lewis index (TLI) = 0.890, comparative fit index (CFI) = 0.903, root mean square error of approximation (RMSEA) = 0.07. This shows that the relationship between trust ($\beta = 0.429$, $p = 0.007$) and perceived reciprocal benefits ($\beta = 0.322$, $p = 0.039$) to knowledge sharing was significant and positive, thus supporting H1 and H2. In addition, the relationship between knowledge sharing and recognition (reputation) ($\beta = 0.725$, $p = 0.000$), and student academic performance ($\beta = 0.951$, $p = 0.000$) was strong and significant, which supported H3 and H4 (see Table 2). The result showed that 50% of the variance associated with knowledge sharing was accounted for by trust and perceived reciprocal benefit.

Table 2: Structural Model Results

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>$\beta$</th>
<th>S.E.</th>
<th>C.R.</th>
<th>P-value</th>
<th>Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 Trust $\rightarrow$ knowledge sharing</td>
<td>0.429</td>
<td>0.150</td>
<td>2.674</td>
<td>0.007**</td>
<td>Yes</td>
</tr>
<tr>
<td>H2 Perceived Reciprocal benefit $\rightarrow$ knowledge sharing</td>
<td>0.322</td>
<td>0.195</td>
<td>2.063</td>
<td>0.039*</td>
<td>Yes</td>
</tr>
<tr>
<td>H3 Knowledge sharing $\rightarrow$ Recognition</td>
<td>0.725</td>
<td>0.103</td>
<td>7.978</td>
<td>0.000</td>
<td>Yes</td>
</tr>
<tr>
<td>H4 knowledge sharing $\rightarrow$ Perceived academic performance</td>
<td>0.951</td>
<td>0.094</td>
<td>11.642</td>
<td>0.000</td>
<td>Yes</td>
</tr>
</tbody>
</table>

$\beta$: Standardized Regression Weight; S.E.: Standardized Error; C.R.: Critical Ratio; *$p<0.05$; **$p<0.01$

To test the hypothesized moderation model in the structural equation modeling (multi-group analysis in Amos), two group models can be used in the core model, which is tested for high and low groups (Hair et al., 2006; Moghavvemi et al., 2015). In this study, using the mean score of the moderator (Altruism), the sample was split into two groups (low altruism group; high altruism group). The constrained and unconstrained models were ran using the multiple group analysis in AMOS. Results from the Chi-square ($\chi^2$) differences confirmed that altruism moderated the relationship between perceived reciprocal benefit and knowledge sharing, thus supporting H2a. However, the effect of perceived reciprocal benefit on knowledge sharing is strong and significant for students with high levels of altruism ($\beta = 0.478$, $p = 0.000$), but not significant for students with low levels of altruism ($\beta = 0.129$, $p = 0.751$). This suggests that students with high levels of altruism are more interested in sharing knowledge with others via Facebook compared to students with low levels of altruism. The effect of perceived reciprocal benefit highlighted the fact that students will share their knowledge based on the expectation of future benefits. However, students with high levels of altruism are not really concerned about future benefits, and they share knowledge without expectations of a return, due to kindness and personal satisfaction gained from helping others.

5. Discussion

The results of this study highlighted the significant effect of trust on students’ knowledge sharing, which may occur because students know each other well and are involved in the same course, making them more comfortable in sharing knowledge. Another reason could be the existence of online communities, which created an environment that facilitated interactions, sense of belonging, and trust. This result is consistent with Ravi (2002), which argued that members of classroom communities will display feelings of belonging and trust. In another research, Chai and Kim (2010) and McLeod (2008) indicated that there is a positive relationship between knowledge sharing amongst bloggers and interpersonal trust. Trust has the capability to affect students’ knowledge sharing, since student’s trust their circle of familiar friends. Students feel more comfortable sharing knowledge via social networks, answering each other’s questions, and uploading new information related to the course.

The results showed a positive effect of perceived reciprocal benefit towards knowledge sharing via Facebook. This suggested that when students believe there could be an opportunity to gain mutual benefit via knowledge sharing, they will be willing to share knowledge. This is consistent with Shapin (1988) and Strong et al. (2008), who divulged that mutual reciprocity is one of the main factors that encourage knowledge sharing. Being in a Facebook group gives students the opportunity to learn about others’ background details and interest, which brings them closer and increase their sense of belonging and reducing the level of uncertainty, which is an essential factor for developing reciprocity and trust.

Previous researches indicated that there is a relationship between knowledge sharing and academic performance, which is supported by the current research. Using Facebook group encourages a better two-way communication and an enhanced level of interaction between students and educationist, which could be a contributing factor to students learning and expanding their knowledge. Ainin, et al. (2015) highlighted that
Social Network Services (SNSs) has developed the opportunity to initiate and uphold relationships with network members and peers, thus creating learning opportunities (i.e. information seeking and knowledge sharing). For example, students have the opportunity to post sample past year questions for a particular subject on Facebook, or they may even share their assignments or project paper details or educational videos, which could positively affect their learning process. Indeed, students can gain much knowledge, information, and experience from the instant chat messaging platform on Facebook, which allows them to exchange ideas and opinions on topics of interest (Ainin, et al., 2015). Collaborative learning is believed to possess the capability of improving and elevating students’ overall academic performance, which will in turn improve their overall academic performance.

Previous researches regard recognition/reputation as determinants of knowledge sharing, while this research shows that recognition is a consequence of knowledge sharing. Knowledge sharing is related to a persons' social status, and when students engage in knowledge sharing activities, there is an opportunity that their status will be elevated and enhanced. Wasko and Faraj (2005) found that reputation and centrality were some of the main reasons encouraging people to engage in knowledge sharing on social media. They justified this by the fact that many social media users share information and contribute knowledge when they assumed that doing so could elevate their professional reputation. Yang and Brown (2013) found that information sharing activities on Facebook could enhance their reputation.

Examining the moderating effect of altruism revealed that there are differences between students with high altruism in the context of knowledge sharing. Students who have high levels of altruism are internally satisfied when helping other members, without expecting anything in return. This is because they are more concerned about helping others and sharing knowledge, despite the fact that they do not elicit the same reactions from the other students in the group. Therefore, the effect of perceived reciprocal benefit is strong among them, which could eventually lead to knowledge sharing and helping of others. The results of this study is consistent with previous researches, indicating that altruism is derived from the intrinsic enjoyment of helping others (Jeon et al., 2011) without expecting any benefits in return (Hsu and Lin, 2008).

Finally, the results of this research highlighted the fact that creating an online community (Facebook Group) increased the possibility of collaboration, sharing knowledge, and seeking information among the students and lecturer as well, compared to the classroom where students are mostly passive. Communication via Facebook brings the lecturers and students closer, create a feeling of belonging, and facilitate deeper levels of communication. Creating a Facebook groups will create a sense of community and commitment, which will encourage them to help each other, as per Cheng et al. (2009), who argued that knowledge sharing requires a people-oriented environment.

5.1 Managerial Implication

The results of this study is useful for academic managers and instructors who intend to improve students’ academic performance and knowledge sharing. They can create a community that is close, share information, and are willing to collaborate with each other, all of which increases their trust and perceived reciprocal benefit. This study can be an excellent reference for academic managers and lecturers in universities on the use of SNS (especially Facebook), as SNS can serve as an ideal platform for students and lecturers to share academic and social knowledge.

5.2 Limitation and future research

The main limitation of this study is the fact that the sample size was small, which makes generalization of the findings inaccurate. We needed a sample size that was readily available, and also wanted a group of students whose behavior could be easily observed and monitored. Another limitation is that the study was only carried out on university students, which limits the possible generalizability of the findings to other sets of the population, such as employees in organizations or other online groups of other SNS. However, future research can use the findings of this study to investigate the effect of online community on knowledge sharing in the other context and setting since knowledge sharing and transferring knowledge are main issues in many organization. We use the self-reported questionnaire to measure academic performance, but future research could use the cumulative grade point average (CGPA) or other measurement to measure the effect of knowledge sharing on academic performance. Future research can investigate the role of social network site as community of practice and how these platforms can increase knowledge sharing amongst different groups and communities, since students are inherently different from organizations and/or individual users.
6. Conclusion

The objective of this study is to measure the effect of perceived reciprocal benefit and trust on students’ knowledge sharing via Facebook and its influence on students’ academic performance and recognition. The results show that trust and perceived reciprocal benefit are strong predictors of students’ knowledge sharing via Facebook. Knowledge sharing via Facebook strongly affects students’ recognition (reputation) and academic performance. The data collected from undergraduate students and this study proved that trust and perceived reciprocal benefit encourage students to share their knowledge via Facebook, while the act of sharing knowledge improves students’ academic performance and reputation amongst peers and lecturers. We highlighted the effect of online community (Facebook group), which facilitates students’ interaction, collaboration, and knowledge sharing. Trust in Facebook group is higher because those within the group know each other better and share similar interests, prompting them to share their respective experience and knowledge. The results of this study confirmed that Facebook group can be one of the platforms (online community) for students and lecturers to share academic and social knowledge ask questions related to a certain topic, and improve their level of socialization and information seeking. Moreover, Facebook can be a platform for universities to disseminate information regarding university events. The finding of this study are applicable to the other online communities that encourage students to be closer, communicate more, share information and knowledge, increase trust, and create the sense of belonging. Finally, we should pay attention to the fact that using social network for teaching and learning and knowledge sharing have both positive/negative effects, and many researchers considered social media/social network as a source of entertainment and believed that it would distract students from school work. Therefore, managing these technologies and reducing the negative effect of usage require more extensive research.

Acknowledgements

The University of Malaya Equitable Society Research Cluster provided financial support for research assistance and project team meetings under Project RP021-14SBS.

References


Moghavvemi, S., and Janatabadi, H.S., 2017, Incremental impact of time on students' use of E-learning via Facebook, British Journal of Educational Technology, DOI: 10.1111/bjet.12545


### Appendix A: Measurements and reliability test

<table>
<thead>
<tr>
<th>Trust</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students in the Facebook group do not take advantage of others even when the opportunity arises.</td>
<td>0.811</td>
</tr>
<tr>
<td>I trust information in the Facebook group to be accurate.</td>
<td></td>
</tr>
<tr>
<td>Members of the Facebook group are truthful in dealing with one another.</td>
<td></td>
</tr>
<tr>
<td>Most students in the Facebook group are willing to help if you need it.</td>
<td></td>
</tr>
<tr>
<td>In the Facebook group, one has to be alert or someone is likely to take advantage of you</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Perceived reciprocal benefit</th>
<th>0.877</th>
</tr>
</thead>
<tbody>
<tr>
<td>If I share my knowledge with other students in the Facebook group, they will help me if I ask.</td>
<td></td>
</tr>
<tr>
<td>If I share my knowledge with other students in the Facebook group, I expect them to share their knowledge with me in the future.</td>
<td></td>
</tr>
<tr>
<td>Students in the Facebook group will help me to solve a problem if I help them to solve a problem.</td>
<td></td>
</tr>
<tr>
<td>Other students will share their knowledge with me if I share my knowledge with them.</td>
<td></td>
</tr>
<tr>
<td>I should share my knowledge with other students if they share their knowledge with me.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recognition (Reputation)</th>
<th>0.781</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other friends (students) praised me when I shared knowledge in the Facebook group</td>
<td></td>
</tr>
<tr>
<td>My knowledge sharing in the Facebook group was acknowledged by other members</td>
<td></td>
</tr>
<tr>
<td>Other students wrote good comments about my knowledge sharing in the Facebook group</td>
<td></td>
</tr>
<tr>
<td>I earned respect from others by sharing knowledge in the Facebook group.</td>
<td></td>
</tr>
<tr>
<td>My knowledge sharing in the Facebook group was appropriately acknowledged by the lecturer</td>
<td></td>
</tr>
<tr>
<td>Sharing knowledge in the Facebook group enhanced my reputation with other class members.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student Academic performance</th>
<th>0.834</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sharing knowledge in the Facebook group helped me to learn</td>
<td></td>
</tr>
<tr>
<td>Sharing knowledge in the Facebook group has had a positive effect on my learning</td>
<td></td>
</tr>
<tr>
<td>Sharing knowledge in the Facebook group helped significantly in my learning</td>
<td></td>
</tr>
<tr>
<td>Sharing knowledge in the Facebook group helped me to learn faster</td>
<td></td>
</tr>
<tr>
<td>Sharing knowledge in the Facebook group made my study easier</td>
<td></td>
</tr>
<tr>
<td>Sharing knowledge in the Facebook group improved my study-related performance</td>
<td></td>
</tr>
<tr>
<td>Sharing knowledge in the Facebook group enlarged the sources of learning available to me</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Knowledge sharing</th>
<th>0.756</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using Facebook to share course-related knowledge was important for my study.</td>
<td></td>
</tr>
<tr>
<td>It was interesting to use Facebook to share course-related knowledge.</td>
<td></td>
</tr>
<tr>
<td>Using Facebook to share course-related knowledge helped me to keep up to date.</td>
<td></td>
</tr>
<tr>
<td>Using Facebook to share course-related knowledge, I could make a contribution to the course.</td>
<td></td>
</tr>
<tr>
<td>I appreciated being able to exchange course-related knowledge with other students on Facebook.</td>
<td></td>
</tr>
<tr>
<td>I enjoyed using Facebook for sharing course-related knowledge.</td>
<td></td>
</tr>
<tr>
<td>It is frustrating to use Facebook to share course-related knowledge.</td>
<td></td>
</tr>
<tr>
<td>I don’t have time to use Facebook to share course-related knowledge.</td>
<td></td>
</tr>
<tr>
<td>I do not know very much about sharing course-related knowledge with Facebook.</td>
<td></td>
</tr>
</tbody>
</table>
Altruism

<table>
<thead>
<tr>
<th>Item</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have given directions to a stranger.</td>
<td>0.701</td>
</tr>
<tr>
<td>I have given money to a stranger who needed it (or asked for it).</td>
<td></td>
</tr>
<tr>
<td>I have done volunteer work for a charity.</td>
<td></td>
</tr>
<tr>
<td>I have helped carry a stranger’s belongings (books, parcels, etc.).</td>
<td></td>
</tr>
<tr>
<td>I have delayed a lift (elevator) and held the door open for a stranger.</td>
<td></td>
</tr>
<tr>
<td>I have allowed someone to go ahead of me in a queue (e.g., in the supermarket, at a cash machine).</td>
<td></td>
</tr>
<tr>
<td>I have pointed out an error (e.g., at the market, in a shop) in undercharging me for an item.</td>
<td></td>
</tr>
<tr>
<td>I have let a neighbour whom I didn’t know very well borrow an item of some value to me (e.g., a dish, tools, etc.)</td>
<td></td>
</tr>
<tr>
<td>I have helped a classmate who I did not know very well with an assignment when my knowledge was greater than his or hers.</td>
<td></td>
</tr>
<tr>
<td>I have looked after a neighbour’s child or children without being paid for it.</td>
<td></td>
</tr>
<tr>
<td>I have offered to help a handicapped or elderly stranger across a street.</td>
<td></td>
</tr>
<tr>
<td>I have offered my seat on a bus or train to a stranger who was standing.</td>
<td></td>
</tr>
<tr>
<td>I have helped an acquaintance to move house.</td>
<td></td>
</tr>
<tr>
<td>I have looked after a neighbour’s pet(s) without being paid for it.</td>
<td></td>
</tr>
</tbody>
</table>

Appendix B: Benchmark for Model Fit Indices

<table>
<thead>
<tr>
<th>Fit Measure</th>
<th>Fit Measures’ Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probability</td>
<td>A p value greater than 0.05 indicates an acceptable fit.</td>
</tr>
<tr>
<td>Chi-Square ($\chi^2$)</td>
<td>The value less than 3 indicates an acceptable fit.</td>
</tr>
<tr>
<td>CMIN/DF ($\chi^2$/df)</td>
<td>A value close to one and not exceeding 3 indicates a good fit.</td>
</tr>
<tr>
<td>RMESA</td>
<td>A value about 0.05 or less indicates a close fit of the model. A value of about 0.08 or less indicates a reasonable error of approximation.</td>
</tr>
<tr>
<td>TLI</td>
<td>A value between 0 and 1. A value close to 1, indicates a very good fit.</td>
</tr>
<tr>
<td>CFI</td>
<td>A value between 0 and 1. A value close to 1 indicates very good fit.</td>
</tr>
<tr>
<td>NFI</td>
<td>The value between 0 and 1. A value of 1 indicates a perfect fit.</td>
</tr>
<tr>
<td>GFI</td>
<td>The value should always be less than or equal to 1. A value of 1 indicates a perfect fit.</td>
</tr>
<tr>
<td>AGFI</td>
<td>A value of 1 and above, whereby the value is bounded by above 1. A value of 1 indicates perfect fit.</td>
</tr>
</tbody>
</table>
Engaging Layers of Intangibles Across Intelligent Learning Ecosystems for Competitive Advantage

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\(^2\)Ithaca College, USA
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Abstract: The Intelligent Learning Ecosystem (ILE) integrates all forms of intangible assets, recognizing not only tacit and explicit knowledge, but also big data and analytics/intelligence within and across organizations. The ILE structure provides a system for dynamic learning through the synthesis and analysis of intangible assets, creating decision-impacting intelligence across the organization and its partners. Here we extend our understanding of how this ecosystem works by also considering the learning dynamics of individuals and teams. As such, the ILE not only facilitates organizational and partner learning but also leverages the positive impact of intangibles management on employee development, team sophistication and company competitiveness.

Consequently, this paper studies the place of knowledge assets in a wider conceptual framework. By managing that wider range of intangible inputs with a structure designed not only to exchange existing knowledge or data but also to create new learning and insights, decision-makers can accomplish several things. Initially, the range of potentially valuable inputs is increased, bringing in a more diverse set of intangibles that might have more relevance in specific industries or companies. Secondly, the structures can be designed not only to exchange knowledge or big data but to bring it all together, along with all other available intangibles, for analysis. As a result, new learning can take place as cross-functional teams derive insights from the inputs. Finally, such a structure can work not only within a single enterprise but across its wider network of collaborators. The resulting intelligence learning ecosystems bring an even wider range of inputs, diverse perspectives, and opportunities for new learning to all the partners. By looking more widely at these possibilities, knowledge assets can be employed even more productively than when considered only in traditional knowledge management systems.

Keywords: knowledge management, big data, intelligence, learning organizations, intelligent learning ecosystem, teams

1. Introduction

We’ve previously argued that knowledge management (KM) and big data/analytics fit together naturally and effectively (Erickson & Rothberg, 2017). We’ve also established how employment of knowledge and other intangible assets can support decision-making, including at the strategic level, and organizational learning (Rothberg & Erickson, 2017)

Here, we take the concepts further by first reviewing the distinctive approaches for managing intangibles, including more analytics-directed efforts. In doing so, we break down system inputs as well as what the most appropriate structures might look like. Some KM systems are based on collecting and distributing knowledge. Some are focused on not only collecting knowledge but also providing an environment to discover new insights. These are contrasted with big data systems, some of which are based only on collecting, transferring, and monitoring data. Other big data systems are also designed for analytics and intelligence, subjecting the data to deeper study. At some point, the potential for learning can be added, going beyond what has typically been done in either KM or big data systems.

The resulting analytical systems also resemble and have a similar purpose to intelligence systems, especially competitive intelligence. There is a reason data mining or predictive analytics are often referred to as business or marketing intelligence, they resemble those familiar structures. The key point is that from all of these perspectives, there are similarities and differences to be studied and understood. Intelligence has a different purpose, one that brings analysis and learning back into the mix, something that is not always recognized in KM or big data work.

This paper specifically looks at and extends lessons learned, going more deeply into conceptual representations of data, knowledge, and intelligence systems while also providing prominent examples of...
outcomes from different fields and extensions such as modeling the impact on individual and team learning. We will again make the argument that intangibles are a primary driver of sustainable competitive advantage and that the ILE can uniquely drive knowledge and intelligence development on multiple levels, creating layers for generating and protecting such advantage. The layers in the ILE structure, encompassing individual, team, organizational and network learning, form a tight and strong weave of knowledge-related assets and relationships that are hard for others to duplicate or discover substitutes.

2. Literature review

Organizations can do more than generate, capture, process, distribute and manage big data or knowledge. They can also provide systems for individuals or teams to analyze intangible knowledge assets from inside and outside the organization, creating new knowledge or intelligence. Intelligence then facilitates decisions that impact how the organization engages with its competitive environment and external network partners. At the base of such systems are structures to transfer data, information, or knowledge and foster learning. While much has been written in the KM field (and now in big data) on how organizations transfer knowledge, recent work on learning organizations is less prominent.

Knowledge management, as a discipline, has typically been very focused on both the nature of its inputs (almost exclusively knowledge) and what is done with them. As we’ll develop further, knowledge itself has been the only subject of interest since the early development of the field. Precursors such as data and information were portrayed as uninteresting, except to the extent they led to knowledge, while extensions such as wisdom or intelligence weren’t part of what KM systems aspired to handle (Zack, 1999; Brown & Duguid, 1991). Further, new knowledge was often treated as an exogenous variable. Individuals (or organizations) learned outside the system. That knowledge was then brought into the organization where KM processes could identify it, capture or transfer it, and share it back out (Nonaka & Takeuchi, 1995). Learning happened as the now existing knowledge was transferred around the organization by appropriate KM structures, but where the new knowledge came from in the first place often wasn’t a major concern.

The structure for this perspective came out of information technology conceptualizations in the 1980s, specifically the DIKW hierarchy (Ackoff, 1989), presenting intangible assets as a progressive movement from raw data through organized information, perspective-based knowledge and on to wisdom. Again, KM theory and practice tended to center on the knowledge level of the hierarchy. But with the advent of big data systems, business analytics, and different types of intelligence, we’ve begun to take another look at the fuller range of knowledge-related assets: data to information to knowledge to wisdom (DIKW).

More recent efforts have advanced the range of intangibles concept. In particular, Kurtz & Snowden’s (2003) sense-making framework has been repurposed to reflect increasingly complex or chaotic environments and the intangibles required to operate effectively within them (Simard, 2014). The environments range from the known, with recognized patterns represented by data and information, through knowable (explicit knowledge), complex (tacit knowledge), and, finally, to chaotic (insight/intelligence). As might be inferred from the description, these environments demand knowledge/intelligence development and decision-making that becomes increasingly complicated, personal, and hard to teach or share as one moves up the hierarchy. And they need different intangibles management systems applied to them (Erickson & Rothberg, 2017).

The knowledge-related environments would include the KM installations with which most in our field are familiar. The knowable/explicit knowledge category would lend itself more to IT-based solutions while the complex/tacit knowledge area would work better with person-to-person exchanges. This is standard practice in the field and nothing particularly new. What is interesting is what we find at the two extremes.

On one hand, the new and burgeoning interest in big data is reflected in the underlying systems to collect, organize, and report on what the resulting massive databases show concerning an organization’s activities. When only about the data, these systems can be used to monitor what is happening in logistics, operations, transactions, marketing, social media, or other data-generating areas in real time. Big data is possible because of rapid improvements in managing the volume, variety, and velocity of data (the three V’s, Laney, 2001). Because of technological improvements and drops in the costs of processing and storage, organizations can now collect and employ huge amounts of data, of different types (including unstructured data such as text, images, video, etc.), and report it in real time. By using dashboards or other devices, the data of interest can be
delivered to decision-makers, allowing them to act on anything going outside of specified boundaries (McAfee & Brynjolfsson, 2012; Chen, et. al., 2012). But none of that requires transformation of the data or new learning beyond establishing trigger points for action or embedded algorithms automating responses to out-of-tolerance results. Data may be presented in different formats or explored by “cutting the data” in different ways, discerning interesting metrics through different cross-tabulations. But the data are not analyzed in order to come up with new insights, knowledge, or intelligence. Nothing really new is created, big databases are simply transferred and monitored according to the metrics of interest that have been uncovered.

Consequently, for the business analytics part of big data, the deeper dive into these databases in order to learn from them, requires different procedures (McAfee & Brynjolfsson, 2012; Chen, et.al., 2012). As opposed to just reporting the data, analytics creates new insights or intelligence by examining the database. The process, usually conducted by teams of data scientists, programmers, and content experts, will manipulate and study the data for unexpected patterns and new learnings. It entails creative approaches and an ability to look at the data in new ways, discovering things others are unlikely to see. Typical techniques here are predictive analytics, often based on correlation, and cluster analysis, grouping together variables with similarities. These, and some of the more qualitative analytics methods we’ll discuss later can actually result in new learnings, not just a repackaging of the existing data streams.

This approach is very much like existing systems for intelligence, especially competitive intelligence, the longest lived and most studied of the related disciplines. Big data analytics uses data as its input but effective intelligence systems are open to the full range of intangible inputs, including data and information but also all types of knowledge and previously generated intelligence. If properly structured, these systems assemble useful inputs, subject them to analysis, and find new insights or learnings from them. This goes beyond traditional KM systems, structured chiefly to share existing knowledge, and harkens back to interest in learning systems that facilitate individual or team learning within the organization.

3. From intelligent learning organizations to intelligence learning ecosystems

Senge (1990) pioneered the organizational learning field, expounding upon the importance of vision, personal mastery and cross-functional teams for creating entities that promote learning. He envisioned processes driven by the exchange of information and ideas in dynamic dialogue among varied, diverse organization members. Argyris (1993; 1992; 1977) espoused that learning happens when errors are identified and corrected (single loop learning). Deeper learning occurs if organizations then go back to discover the error’s source, intending prevention (double loop learning). Others (Tosey, et. al., 2011) extended these ideas to triple loop learning, deepening the learning process from what is learned to how it is learned and embedded into systems (Nielsen, 1993), changing the learning paradigms themselves (Issacs, 1993), informing strategic thinking (Hawkins, 1991), and engaging all inquiry necessary to drive a higher order of learning (Roper & Pettit, 2002). Individuals are pushed to think differently, resulting in personal insights that can further drive organizational learning.

Both Senge and Argyris believed that for a learning organization to succeed, participants needed to engage outside of pre-conceived mental and analytical models and allow for unbridled discussion and inquiry. This would then tap into both individual and organizational knowledge to create new understanding and growth for all. To this end, cross-functional teams of people are employed to accomplish work and to forge new methods and insights into how to best get work done. Cross-functional team brainstorming can drive improved processes and systems. Cross-functional teams are also core to productive intelligence systems where individuals come together to convert personal knowledge assets into intelligence that has strategic impact for the organization (Rothberg & Erickson, 2005). Here team learning informs individual processing, enhancing personal knowledge that in turn creates new learning that can then be applied to new analytical and decision situations. In short, the methods for creating a learning organization also change the intangible assets of people and teams, potentially impacting their actions across situations.

More recently, Rothberg & Erickson (2016), adapting competitive intelligence structures, brought these concepts back into the KM discussion. Intelligent learning organizations (ILO) provide a foundation to access and integrate all forms of intangible assets, including big data (Rothberg & Erickson, 2017). Here, organizations perform analysis and yet also move beyond it and assimilate lessons from the outcomes of analysis. As we’ll develop in this paper, this structure can be expanded to include engagement with external stakeholders,
including an entire network of collaborators that expands the ILO into an intelligent learning ecosystem (ILE).

In the spirit of triple loop learning and examining not just results but learning processes, the very nature of the ILE expands an organization’s scope of knowledge, network relationships, and sphere of influence. This confluence of intangible inputs and cooperative learning environment ushers in the possibility for dramatic change in how organizations view data and knowledge. The full range of intangibles can contribute to intelligence and learning and has the potential to turn endogenous and purposeful.

**Table 1:** From learning organization to an intelligent learning ecosystem

<table>
<thead>
<tr>
<th>Learning Organization</th>
<th>Intelligent Learning Organization (ILO)</th>
<th>Intelligent Learning Ecosystem (ELO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-loop learning</td>
<td>Double-loop learning</td>
<td>Triple-loop learning</td>
</tr>
<tr>
<td>Dialogue</td>
<td>Mission-driven</td>
<td>Vision-driven and strategic</td>
</tr>
<tr>
<td>Mastery and team learning</td>
<td>Convergence points and feedback loops generate insights</td>
<td>Engagement between external stakeholders and organizational agents</td>
</tr>
<tr>
<td>Knowledge transfer</td>
<td>Cross-functional teams, extending across expertise and hierarchy</td>
<td>Boundary-spanning, cross-functional teams</td>
</tr>
<tr>
<td>Managerial support</td>
<td>Knowledge transfer and lessons learned</td>
<td>Lessons learned, perspective on different ways to do things</td>
</tr>
<tr>
<td></td>
<td>Upper-level decision support</td>
<td>Upper level change engagement</td>
</tr>
</tbody>
</table>

An ILE system structure is governed by eleven assumptions:

- External stakeholders are data/knowledge partners, as contributors of intangible inputs and drivers of inquiry and new learning.
- System can engage the full array of internally generated and externally captured tangible and intangible inputs.
- Open dialogue drives the process
- Double loop culture, triple loop intention
- Intelligent design means that it is action-oriented
- Clear mission
- Driven by mastery
- Team-grounded
- Taboo-free
- Incentivized for quality impact
- Senior management attention

**Figure 1:** Intelligent learning ecosystem
As covered in the literature review, the revised Kurtz & Snowden sensemaking framework is used to organize the intangibles inputs. All of the intangibles of the organization and/or its partners can be put to use, depending on availability and potential contribution. Data/information (including big data) can be fed into the system as can increasingly personal forms of intangible assets: explicit knowledge, tacit knowledge, and intelligence. Again, what may be pre-eminent or important in a given situation will depend on the industry and, perhaps, even the specific firms. It’s up to the system to collect and review the inputs. Users can then determine what might be appropriate to analyze to discern deeper insights and learning.

Thus, in this ecosystem, all of the intangible assets of its players may be sourced and applied to a vision-driven purpose. Cross-functional teams are also cross-organizational, as are the expert networks and focal points for analysis to converge. There are multiple feedback loops that encourage learning from what works and what doesn’t work (single loop), learning how to make things work better (double loop) and integrating such learning (triple loop) among partners throughout the system. The integration not only feeds engagement between network partners but also with other parts of all member organizations, improving process and system with positive changes (ecosystem outcome).

Digging more deeply into the ILE, one can position it as a platform for leveraging an organization’s knowledge assets so as to create learning within and across its boundaries. It can incorporate any type of big data, knowledge management, or intelligence system to manage the intangibles’ organization and flow. It would also include an intelligence design that brings together cross-functional teams and networks of experts to analytically convert intangibles into actionable intelligence that informs strategic decisions. The ILE can also reach beyond each participating organization to create an ecosystem where deliberate exchanges with partners, through strategic alliances, joint ventures, or partnerships, drive opportunities to create new, shared knowledge or intelligence. Such newly created intangibles can then be brought back to each institution and be the catalyst for even more new learning, going beyond the original scope and purpose of the ILE itself.

Core to an ILE being a player in an organization’s competitiveness and quest for advantage is that:

- The full array of intangibles relevant for ecosystem relationships are collected and available for system learning
- Each player in the ILE generates intelligence by putting their learning to use.
- Cross-functional teams successfully work together intra- and inter-organizationally

Previously we have addressed the importance of employing the full array of intangibles dynamically to fuel an organization’s quest for generating intelligence and competitive advantage. We have also addressed the pivotal role of cross-functional teams in helping to convert knowledge to intelligence. Here we extend this understand by highlighting how teams learn, as this is pivotal to competitive success of an ILE.

Team Learning, an Essential Dimension for ILE Success

As organizations engage across the ILE, individuals and teams are convened and tasked with generating relationships, identifying activities, creating systems, and problem solving. Although brought together for mutually beneficially purposes, each entity in the ILE has its own agenda of needs and desired outcomes. Individuals and teams, and individuals within in teams, also have their own tacit agendas. Somehow, these competing intentions need to find a way to create trade-offs and contracts whereby needs and wants are satisfied. As agreements about goals, processes and outcomes are hammered out by ILE agents, teams and the people that populate them learn- not only about each other’s businesses and practices- but also about each other and themselves. They build human, structural, and relational capital that can transfer to other collaborative and negotiated engagements outside of or in addendum to the current ecosystem. How well this happens is both a testament to the intricacies of how individuals learn, how they learn in teams, and how the teams themselves learn.

The intent in the discussion that follows is not to review the plethora of research on how individuals learn. Instead, it is to consider individual learning within teams and team learning. Understanding these learning dynamics is essential to understanding the motors that drive learning organizations and ILEs.
Nonaka and Takeuchi (1995) suggested that new knowledge is created by individuals, not organizations. An organization has the opportunity to institutionalize new knowledge and then share it across its members, but is generally not credited with creation in KM circles. When this new intellectual capital is shared with others, individuals learn and add to their knowledge store even though no further creation needs to take place. One contributor's knowledge is passed to a receiver, so the receiver learns by taking in the existing knowledge. Further leveraging of existing knowledge can take place when applied to organization systems and processes (structural capital). As organizations systematize individual knowledge, making it a part of established processes, procedures, or even culture, it can become more of a shared, enduring knowledge asset. How well this dynamic occurs, individual knowledge creation by people perhaps begetting new structural capital, is a matter of organizational design and culture. Organizations that encourage the sharing of new knowledge creation and its synthesis with other intangible assets into organization learning processes may demonstrate stronger financial performance over time (Goh & Ryan, 2008).

For an organization to learn, it has to provide the right structure and have the right people in place to create “organizational” learning through their insights. Organizations learn best when they have vision and mission driven cross-functional teams engaging in dialogue (Senge, 1990). Teams have been widely considered the bedrock of modern organizations (Kozlowski & Bell, 2003). They are relied upon to continuously learn and manage increasingly global, complex, and competitive environments (Shuffler, et. al., 2011). Bringing people together with differing perspectives, experiences and knowledge bases creates a more effective mix for working with such challenges then an individual on their own. To make this viable, differences among team members need to be integrated into a shared understanding through rich discussion and negotiation (Daft & Weick, 1984; Roschelle, 1992). For an ILE to be effective, teams need to learn how to get along and work well. Team learning is a social, cognitive and knowledge sharing process. Its success depends on the nature of interpersonal and socio-cognitive dynamics (Van de Bossche, et. al., 2006), as well as the nature of conflict that inevitably arises. Conflict can disrupt or enhance team learning processes. Affective or relationship conflict results from personal incompatibilities that generate hostility (Amason, 1996) and animosity that can derail decision-making (van den Berg et al., 2014). Power struggles can ensue when teams (and their agendas) from organizations across the ILE come together. The mergers & acquisitions literature is rife with examples of partnerships unraveling as players from each organization vie for power and prominence. This can be offset when teams share leadership roles early in their development, creating stable working network structures that facilitate team learning. (Wang, et. al., 2017). The ground rules, then, for ILE relationship building can take the same tack to bypass affective conflict and instead engage constructive conflict.

Constructive conflict, the critical and thorough consideration of each member’s ideas, differences of opinions and contributions, creates shared mental models regarding situational challenges (Van, et. al., 2011). Shared mental models are essential for team learning and problem solving. Diversity drives T-shaped cross-functional and inter-ILE teams. Team diversity fosters more cognitive or task conflict stemming from differences in perspective in pursuit of a common goal but also adds distinct perspectives and experience that improve outcomes (de Wit, Greer & Jehn, 2012, Amason,1996, Jehn, 1994). Constructive, cognitive-based conflict, employing listening to disparate ideas and considering the merit of each, yields greater satisfaction for team members. This in turn has been shown to increase an individual’s desire to share what they know (Medina, 2016). Sharing knowledge drives the team learning process. When teams learn well together, their potential to be more creative increases (Hirst, et. al., 2009).

Successful team learning within and across the ILE establishes and solidifies the norms governing the ecosystem. Respect for differences of opinion, the welcoming of different knowledge and experience bases, and clarity of purpose provide the foundation for cross-functional and cross-ILE teams to learn and perform. Such cross-organization lessons in power sharing, civility, and constructive debate can transfer back to organization management and learning processes. And, as people from across an organization engage more with each other as well as those from the larger ecosystem, the generation and transfer of learning to new situations enhances all forms of intellectual capital. This in turn creates layers of knowing and learning that are intangible, dynamic and perhaps become a deep well for creating sustainable advantage.

ILE as a Platform of Engagement

The concept of the ILE as a platform borrows from strategic thinking around the disruptive economies ushered in by innovators such as Apple (iphone), Google and Facebook. VanAlstyne, Parker and Choudary (2016)
suggest that platforms bring together producer and consumer, with information and interaction exchanges that create value for both. The platform can also add participants such as suppliers, vendors, and partners. As the number of participants grows, network effects amplify the value of the biggest platforms. While the idea of platforms is not new (e.g. malls bringing together consumers and a variety of retailers), current networked platforms have data, information and other intangibles at their core. In the platform ecosystem, the critical assets are the community and the resources of its members, including the data/information they create, the knowledge they engender, and ultimately the learning that they can facilitate. It is possible that organizations can become such platforms as they engage with different alliance partners, learning from each as they enter and exit relationships, digesting deliberate and synchronistic lessons, and then weaving them into their own DNA so as to impact their next partnerships in both planned and unexpected ways. When the network partners include participants directly engaging consumers and bringing them into the mix, the capabilities are extended even further.

This perspective also draws in a persistent concern with KM systems, whether enough trust exists between participants to engender full knowledge exchange (Bontis, 1999). Trust has always been modeled as a willingness to be vulnerable, requiring ability, benevolence, and integrity on the part of the opposite party if they are to deliver as expected (Moore, et. al., 1995). As knowledge is often perceived as power by the individual holding it, surrendering the knowledge means trusting that their position will not be diminished (e.g. outsourcing their job after documenting how to do it). The user of the knowledge trusts that it will be of use, that if they take the time to learn from another, the results can be usefully applied. If any part of that exchange breaks down, the entire exchange system on which KM is built can break down as well (Matson, et. al., 2003). The concerns apply as well to exchanges of other intangibles even if data/information are more often collected and distributed by organizations rather than individuals.

Within a single organization, managing trust can be difficult enough. A strong culture or high social capital can help (Bontis, 1999, Nahapiet & Ghoshal, 1998). But cross-functional or cross-location teams can have difficulty creating the necessary trust for effective sharing. When the structure is extended to outside the organization, bringing in external partners, the problem of trust is exacerbated. Different parties need to demonstrate their competence (ability), their good intentions toward other participants (benevolence), and their integrity (willingness to meet their responsibilities) for the teams and full ecosystem to work. This may take considerable time and effort. As with standard KM systems, where gaining participation is always an issue, trust in the process is a challenge. It is an even bigger one in an ILE context and demands special attention.

4. Cooperative structures

Cooperative relationships--alliances, joint ventures and partnerships--bring together varied players with their own intangible asset stocks in a defined sharing relationship. Organizations engage in cooperative relationships to manage risk, share capabilities, and/or expand their reach in ways that are mutually beneficial. And while the nature of the business relationship is defined, the extent of the learning relationship and informal intangible exchange is not. In an alliance relationship, for example, two or more companies come together to achieve a common objective with each contributing its own capabilities and benefitting capabilities of other participants. This can be structured as co-branding, cross-licensing, co-marketing, or co-development, to name just a few. In such relationships participants look to benefit from the relationship’s formal agreement of data or knowledge exchange, perhaps sharing in the outcome of big data insights about consumer or user behaviors. But each can also learn from informal interactions, as how each runs its business for example.

To illustrate, Barnes & Noble and Starbucks have had an alliance for decades. Initially, Starbucks had the benefit of promoting brand awareness with a renowned bookseller while Barnes & Noble gained from customers spending more time in its stores while enjoying their coffee. Eventually, however, Barnes & Noble had the opportunity to learn something more about creating a destination environment, where people would choose to come to get work done, to meet others, or for personal needs. This is a triple loop learn, about changing the culture of the bookstore from a retailer to an experience, perhaps altering the reasons that a person would come to a bookstore and especially important as online retailing continues to gather momentum. Together the partners create an ecosystem where one appears to have learned more than just a co-marketing opportunity. Spotify and Uber’s alliance relationship (or, similarly, SiriusXM’s free sample partnership with multiple automakers including installed hardware and a months-long gratis subscription) also illustrates the point by facilitating a more enjoyable customer experience, creating differentiation, and
enabling big data insights. Each partner has the opportunity to further learn about customer habits and preferences, taking the relationship to a higher level.

Knowledge-based companies such as consulting firms organized as hybrids can also work as ecosystems. They rely on their teams to have the right composition of know-how and cross-organization relational dynamics to apply the depth of their knowledge stocks to clients in specific vertical markets and to then bring back what they learn to enhance their knowledge stocks. IBM Global Services is structured this way, creating the opportunity for continuous learning not only internally but also across different learning partners (clients). Consultants work in market-defined segments such as healthcare, pharmaceuticals, or education. Knowledge capabilities (products, processes, software) are continuously developed. Each market area draws on what it requires from the product/service side to fulfill client needs. With each client, new learning is possible that informs engagement with the next client and then the utility of those developing capabilities. As each client engages, each consultant fulfills, and each engineer learns, new learning drives existing client work and is then applied to new clients. These lessons can also be shared across market or industry divisions. The ecosystem, supported by appropriate internal cultures, is a generative learning engine with impact limited only by willingness of agents to engage. And companies engaging in such an ILE, who can access and enhance the knowledge and intelligence capabilities across individual, team, and organization, have the makings of a more layered and more sustainable competitive position.

The ability of the ILE to dramatically impact organizations is an outcome of not only internal processes where all types of knowledge assets come together to create knowledge—but also how it is then employed, expanded on and engaged with by external partners. The backbone for the internet was created by a consortium of technology giants who together needed a common framework and who then separately took the capabilities of what they created to develop products and services in accordance with their own knowledge assets and core competencies. In time, different “apps”“have had to learn to work together, to run on each other’s applications and together they share the benefits of generating big data, separately harvesting insights that influence their business decisions.

As a more extended example, and applying the system framework illustrated above, consider the current example of autonomous driving. Navigant (Abuelsamid, et. al., 2017) released its annual ranking of announced competitors in the field and while the metrics might be debated, there is a clear picture of the wide range of participants from different industries and industry sectors. Virtually all the major automobile manufacturers are represented, both traditional (GM, Ford, Toyota) and innovative (Tesla). In addition, everyone from parts suppliers (Delphi) to information technology component suppliers (Intel), from software (Alphabet/Google) to ride-sharing (Uber) are included. As should be Apple, not on the Navigant list only because the firm has not formally announced an interest in driverless cars.

From our perspective, however, what’s really interesting about the burgeoning field is the varied nature of approaches to the intangibles necessary to compete. Apple’s interest in the sector was identified when journalists were able to identify numerous new hires with considerable experience in the auto industry (Wakabayashi & Ramsey, 2015). Competitive intelligence/economic espionage has also been a factor with Alphabet’s Waymo subsidiary accusing Uber of poaching an employee allegedly bringing thousands of documents with them (Hawkins, 2017). But most prominent in the mix are examples of firms from different sectors and with different intangibles capabilities working with each other to bring a product quickly to market.

Perhaps the best example is the relationship between BMW, Intel, and Mobileye. The partnership announced at the Consumer Electronics Show in January 2017 that it would be bringing 40 test models onto the road by the end of the year (Korosec, 2017). Each partner contributes something very different to the mix. BMW, of course, is a traditional auto manufacturer and “will be responsible for developing driving control and dynamics, [and] overall functional safety” including simulation, prototype, and scale-up. Intel “will contribute its computing power with artificial intelligence and data center capabilities”, while Mobileye brings “advanced sensor technology” and the associated, complex software.
Figure 2: Autonomous driving as an ILE

From the range of intangibles point-of-view developed earlier in this paper, we can partially identify the sector strengths and weaknesses of each (Erickson & Rothberg, 2017). All of these sectors have considerable data (Manyika, et. al., 2011), so big data is present in the areas of supply chain logistics, manufacturing, software development, performance feedback, and customer relationships. In terms of explicit knowledge, automakers like BMW have significant but below average explicit and tacit knowledge assets (not surprising for sectors with fairly mature processes). But semiconductor manufacturers (Intel) and software/web firms (Mobileye, the programming ties the sensors into systems) both have very high knowledge metrics, with considerable explicit knowledge apparent. Further, the latter two also have evidence of considerable tacit knowledge and intelligence capabilities while automakers, once again, possess lower, less-than-average levels of each.

This can be depicted in a variation on the ILE systems figure presented earlier. Each participant brings different contributions to the partnership. In the end, the physical automobile must be manufactured and so, even though the data/information and explicit knowledge about how to do that are not highly innovative, these are critical intangibles not possessed by the other partners. And it is quite possible that BMW does them better than many of the other auto manufacturers vying for leadership in the sector. Those contributions of a safe, working automobile and the ability to take autonomous driving machine envisioned by the network and move it to mass manufacturing are both valuable contributions. Even though not necessarily new knowledge, it is something crucial to the partnership.

The other two partners bring the full range of intangibles and potentially critical innovations to the ecosystem. A big part of the autonomous driving problem is the ability to take in reams of data on the operating environment—what is around the car, how the car is performing, what might happen around the next corner. That requires advanced sensors designed to take in the data, raw processing power to combine that data with what is known about similar circumstances, built-in software, algorithms, and even artificial intelligence related to how the machine should react. These capabilities are amplified by continued learning based on new observations (by humans and by artificial intelligence) and the ability to communicate with systems that physically execute such choices in real time. Further, all of the firms in this sector will want to continually collect new data and information from the full fleet of cars on the road in order to learn more as an enterprise. The loops of learning are critical to success.

Finally, as illustrated in the figure and demonstrating the learning loops discussed in the conceptualization, the core firm and partners will learn themselves, internally, but will also learn from each other. We can surmise that agents within this ILE are well engaged in the three criteria for achieving competitiveness: the full array of knowledge assets are employed and shared, they are being converted into usable intelligence in autonomous
driving and intra- and inter-organization teams have learned how to productively work together and learn. As such, BMW will make better cars, based on what it learns on its own (intra-organizational loop) and from its partners (stakeholder to organizational loop). Similarly, both Intel and Mobileye will learn from their own successes and failures (intra-organizational loops) as well as from BMW and how they interact with it (organizational to stakeholder loop). Indeed, as a more general characterization, inter-organizational learning goes on between all the partners as they learn more about dealing with one another and about fitting their contributions to those of their partners. In an ideal world, everyone in the ecosystem learns, improving their own situation and the overall partnership. BMW becomes not only a better car builder but a better autonomous car builder, specifically for those vehicles using Intel and Mobileye components. Intel becomes not only a better automotive chipmaker, but a better automotive chipmaker for BMW cars using Mobileye components. And, similarly, Mobileye becomes not only a better sensor system designer and builder but a better sensor supplier for BMW cars equipped with Intel chips.

5. Conclusions

Knowledge management practice and scholarship have gone through a number of changes in emphasis and direction over the decades. The advent of big data systems and business analytics/intelligence have raised questions about the continued relevance of KM, particularly as a stand-alone discipline. This paper has considered the place of KM in this new and rapidly changing world.

Our view is that the current environment provides new opportunities for KM as a discipline, if its participants are willing to grasp them. Both big data, at one end of an intangibles hierarchy, and intelligence at the other end have been only peripheral concepts in KM which tends to focus almost exclusively on knowledge. But what we, as KM scholars and practitioners, know concerning sharing of intangibles works very well with what big data systems are trying to accomplish. And though organizational learning has also been forgotten as KM focused more on knowledge transfer, the field also has a basis in how conditions can be created for the sharing of intangible inputs, their analysis, and the application of any new learning coming out of the process.

With an open mind to the wider range of valuable intangible assets available to today’s organizations—data/information, explicit knowledge, tacit knowledge, and insight/intelligence—our discipline has more to offer. Indeed, by exploring the potential of new structures designed to create a positive environment for all these intangibles, KM can take a step forward and create new contributions.

This paper, in particular, looks at the possibilities of an intelligent learning ecosystem (ILE), linking up an organization and its network of partners in a structure designed for the sharing of existing intangibles and creation of new ones. By identifying and exchanging all forms of intangibles, not only knowledge but also relevant data and existing intelligence, network partners can provide more diverse perspectives to each other. When analyzed by cross-functional teams, all partners have opportunities to learn not only from themselves but from each of the others. And the learning is not necessarily only about the subject at hand but other, unrelated areas that can lend further value. Such structures also take KM out of its emphasis on operational decision-making and create an avenue for more input into strategic activities at higher levels of the organization.

ILE individual and team learning across agents provides the opportunity for lesson transfer back to organizations. In an effective ILE, individuals and teams have ascertained how to purposefully and cooperatively engage with partners, each bringing something different to the relationship that not only fulfills each organization’s need, but also serves to alter each organization in fundamental and perhaps significant ways. Sharing of know-how across the ecosystem fuels each player’s knowledge base and learning. Human capital is enhanced as players integrate lessons from constructively working through conflict, from relationship building, and from interacting with a diverse array of knowledge and personality. Teams, the collection of such people that are brought together to accomplish something, learn how to be productive as a group and with other collectives as they manage their internal and external processes. If such lessons are transferred across the organization as it learns from its experiences, then the ILE has the potential to generate deep layers of sustainable competitive advantage.
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Relating Successful Business Models to Intellectual Capital and Knowledge Management Practices

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Abstract: There are a number of natural links between the fields of business models and knowledge management. The contemporary understanding of business models is that they are concerned with describing and analyzing the methods of value creation and the alternative ways of delivering use value to customers that are applied by organizations. Similarly, knowledge management also has intricate connections with mechanisms of value creation, through the structuring and improvement of knowledge processes in a given organization. Ensuring that the right knowledge is present is an important part of any business model innovation exercise. By applying the lens of intellectual capital, a natural link between business models and knowledge management is established. From this link, it is possible to structure and describe key characteristics. This paper accounts for the relationships between business models and knowledge management, mediated by intellectual capital, and draws up a schema by which the relationships can be described and discussed. It concludes by synthesizing a future research agenda to further address these relationships and to strengthen our understanding of how they improve the value creation of organizations.

1. Introduction

Improving knowledge management is essentially about improving the value creation of organizations. So is improving business models. Sometimes the improvement of knowledge management practices creates improvements in business models, and at other times this relationship may be swapped around. From time to time, organizations may be faced with the prospect of having to change the business model altogether, and this will likewise affect the knowledge management practices in organization, and often in a more substantial manner.

According to Dane-Nielsen and Nielsen (2017) the foundation of value creation of any business model is its intellectual capital, and thereby, knowledge management becomes an important activity in any business model. Naturally, there will be variations in the importance, but also the type of knowledge management that takes place in a given business model. The relationship depicted here ascribes that business models provide enlightenment on the necessary IC in the organization and through this set out the managerial and strategic implications for knowledge management, as argued in the Danish guideline for intellectual capital (Mouritsen et al., 2003), while further influencing the identification of relevant KPIs (WIRF, 2016).

However, in the recent literature on business models, specifically studying different business model recipes (Baden-Fuller and Morgan, 2010), also called business model configurations (Nielsen et al. 2017), it is suggested that some business models have knowledge management and intellectual capital as their key value drivers (Taran et al., 2016). The research issue to be explained is that intellectual capital and knowledge are important for all business models, and that there are specific business model configurations where knowledge management is the key asset or value driver. Prominent examples of this are companies such as Google and Facebook, who apply data-driven business models. Both companies’ value creation is founded on knowledge about the users of their products and services. Other examples of knowledge driven business models are the Infomediary configuration as applied by Edmunds.com in collecting and processing information for others in
regards to markets, products, producers and consumers. Also, the Trusted Advisor configuration applied by McKinsey and Merrill Lynch, who strive to stay on top of information loops and provide customers with answers to complex questions.

1.1 Knowledge management

To imply that knowledge is either a very important resource, or even the most important resource and foundation of an organization’s future competitiveness a common altruism. Nonaka (1994) provides a frequently applied method of differentiating between different types of knowledge at individual and organizational levels, and an additional dimension is that of differentiating between tacit and explicit knowledge (cf. Polanyi 1966; Nonaka and Takeuchi 1995). Baxter and Chua (1999) argue that knowledge management is about creating appropriate organizational infrastructure(s) to facilitate the circulation of individual knowledge to potential users with the intent of reassembling, refocusing or reusing it (McNamara et al., 2004). Examples of this could be knowledge transfer from one department to another or the implantation of tacit knowledge through mentoring.

According to Nielsen (2005), there exist organizational hindrances for the sharing and dispersion of knowledge both within the organization, but also in relation to external collaborators. The so-called horizontal borders of knowledge concern the organization’s internal architecture for facilitating knowledge sharing and transfer. A company’s advantage compared to free agents operating on the open market is that it contributes with formal and informal information channels and mechanisms making the development and transfer of knowledge resources and competences possible (Almeida et al. 2002, 155), which is in line with a transaction cost perspective on organizations. Kogut and Zander (1992, p. 383) explain that “what firms do better than markets is the sharing and transfer of knowledge of the individuals and groups within an organization”.

The vertical borders of knowledge, Nielsen (2005) argues that the relationships and liaisons with adjacent organizations in the value chain can be characterized. For example, are alliances characterized by high interaction-levels and collaboration or are the relationships more like «Chinese Walls»? The handling of knowledge management in relation to the vertical borders depends on the type of relationships formed between the organization and its strategic partners. Sweet (2001) argues that it is the ability to manage the underlying strategic configurations of value creation between the organization and its strategic partners that is decisive for creating sustainable results. It is evident that knowledge management can be related to not only the knowledge of individuals, but also to the knowledge that has relations to technologies, processes and relationships with for example customers and strategic partners around the focal firm. In this sense, knowledge management can be viewed as actions relating to growing, creating, acquiring or discarding the intellectual capital which is embedded in the organization.

1.2 Intellectual capital

Consistent with such an idea of developing intellectual capital, Edvinsson (1997) initially divided intellectual capital into two types: human capital and structural capital. The latter was then sub divided into customer capital and organizational capital. Customer capital includes such assets as customer databases and distribution channels, together with the goodwill that employees have built up with customers over time, while organizational capital includes organizational structures and operating procedures. Over time, a number of large scale intellectual capital reporting initiatives have launched on both national and supra-national levels. Supra-national initiatives include the Meritum guideline (Meritum, 2002) and the Intellectual Capital Statements for Europe (InCaS) project (Mertins and Will, 2007; Mertins et al., 2009), the latter of which coupled intellectual capital and knowledge management together specifically through a business process perspective. Prominent examples of national initiatives are found in Australia (Boedker et al., 2005), Japan (Johanson et al., 2006) and Germany (FMEL, 2004). In the latter case, Edvinsson and Kivikas (2007) point out that companies demand a more standardized Wissensbilanz with indicators in order to be able to use it as a management report in addition to the external reporting purpose of an intellectual capital report, hence coupling the needs for both reporting and managing.

In an attempt to create a pragmatic methodology for managing and reporting intellectual capital, a Danish project running from 1997 to 2002 created the Danish Guideline for Intellectual Capital Statements (DATI, 2001, Mouritsen et al., 2003), depicting a relationship between knowledge management and intellectual capital. The model proposed by Mouritsen et al. (2003) includes the four elements: 1) Knowledge narrative, 2) Management challenges, 3) Activities and 4) Indicators. The purpose of the Intellectual Capital Statement was
to communicate the use value of the organization’s product/service offering. The Intellectual Capital Statement highlights the ambition of the company’s knowledge management, because it formulates a strategy for the company’s know-how in the future. Mouritsen et al.’s (2003) Intellectual Capital Statement model is presented in Figure 1.

![Figure 1: The Danish guideline for intellectual capital statements (Mouritsen et al., 2003, 13)](image)

According to Bukh et al. (2001), the knowledge narrative is a story about how the company creates value for its users through the utilization of its knowledge resources. The knowledge narrative pinpoints the ambition of the company’s knowledge management, because it not only accounts for present performance, but also formulates a strategy for the company’s know-how in the future. The knowledge narrative fulfills this objective by describing three elements: How the user is taken into account by the company’s products or services, called use value; which knowledge resources – in the form of employees, customers, processes and technologies – it must possess in order to deliver the described use value; and lastly the particular nature of the product or service.

In the Intellectual Capital Statement, the company’s management challenges are a set of meaningful and lasting elements in the managerial agenda that provide continuity in handling the development and composition of knowledge resources (Nielsen et al., 2007). Thus, these management challenges relate to the needs for knowledge management which can be derived from the knowledge narrative and which the company must address in order to fulfill the ambition defined in it. This activity involves a number of strategic choices in implementing the knowledge narrative.

By taking on the form of a coherent narrative, the knowledge narrative and management challenges constitute the company’s strategy for knowledge management, which thereby communicates the company’s ambition for knowledge management and how it intends to realize this. To develop and compose knowledge resources and the key management challenges, a series of initiatives are constructed around the four knowledge types: employees, customers, processes and technologies. Lastly, the effects of the efforts and management challenges described above are monitored via indicators e.g. about staff turnover and job satisfaction, in-service training, turnover split on customers, customer satisfaction, precision of supply etc. (cf. Bukh et al. 2001; Mouritsen et al. 2001), thus indicating to which extent these have been implemented.

The final external Intellectual Capital Statement is a report that via text, figures and illustrations presents the organization’s knowledge management effort (Mouritsen et al., 2001). The purpose of the report is to communicate the knowledge narrative and management challenges and to document that the appropriate actions have been implemented.

### 1.3 Business models

As is evident in the above section, ‘use value’ is at the core of the Intellectual Capital Statement. Use value reappeared in the management literature a few years later as the central notion of business models thinking; most prominently in the widely-disseminated Business Model Canvas (Osterwalder and Pigneur, 2010). The concept of business models offers a novel perspective from which to understand how companies become profitable, efficient, competitive and sustainable. Contemporary foci in the field of business models discuss definitions, delimitations and constructing frameworks for analysing business models (Wirtz et al., 2016) or innovating them (Foss and Saebi, 2017). Despite lacking unified theoretical groundings, at least according to Zott et al. (2011), many of these frameworks and ontologies have proven to be successful in practice.
For any company, it is important to be aware of the business model being applied for two reasons: First, the business model is the platform for executing corporate strategy. Therefore, if the business model is poorly configured or implemented, then the company will have difficulties in carrying through the strategy, including its strategy for knowledge management, and ultimately then also meeting the non-financial and financial targets. Second, the business model affects the managerial processes of the organization because it directs the focus of how the firm does business. If the business model of a given firm relies on close ties with customers and the continuous involvement of strategic partners, then the managerial focus is expected to differ drastically from a situation where all customer interaction is web-based and all functions are in-house.

Baden-Fuller and Morgan (2010) argue that business models are distinct recipes of doing business that can be classified by how they are configured. Sometimes the naming of the specific business model is done through the example of a well-known company. Five good examples of this are the eBay business model, the Dell business model, the Ryanair business model, the Gillette business model and the Skype business model. Through their 5-V ontology, Taran et al. (2016) provide a complete overview of 71 business model configurations that can help companies to seeing alternative ways of designing their value creation, value delivery and value capture mechanisms.

2. Synthesizing the relationships

Because intellectual capital is at the heart of all business models (Dane-Nielsen and Nielsen, 2017) and intellectual capital and business models are central themes in contemporary manners of reporting about value creation (IIRC, 2013), the remainder of this article analyses the relationships between knowledge management, intellectual capital and business models according to three output dimensions: 1) Creating innovation in organizations, 2) managing organizations and 3) reporting about organizations’ value creation. We analyze the three intertwined concepts according to concerns of A) doing the right things, and B) doing things right. Future research perspectives are provided in the concluding remarks.

2.1 Innovating

Creating innovation is important for growth prospects as well as for the long-term sustainability of organizations and innovation and renewal were already recognized as important constituents of value creation in Edvinsson’s (1997) Skandia Navigator. Innovation in a given organization is expected to affect its intellectual capital resources positively. However, innovation will also the effect of activities performed in the company to build intellectual capital in relation to employees, customers, strategic partners, processes, technologies and business models. The role of the knowledge management strategy is to ensure that these activities are aligned with overall vision of the organization. Hence, the causality can flow two ways. Either, the innovation of technologies, processes etc. can lead to the necessary innovation of the existing business model, or the innovation of the existing business model, as the starting point, may lead to the necessity of acquiring new types of knowledge and intellectual capital resources.

Innovating organizations is primarily concerned with doing the right things and business model innovation is an important mechanism for capturing value when new knowledge and intellectual capital is either developed or bought. Once the right things are being done, knowledge management becomes an important mechanism for the ensuring of doing things right.

2.2 Managing

Different business models require different management foci and perhaps even different management styles (Brøndum et al., 2015). The same goes for different types of intellectual capital. Managing intellectual capital is about translating the identified management challenges into activities and a set of indicators that can assist in providing direction. A seminal method of contemplating the management of knowledge is Nonaka’s (1994) four processes of knowledge conversion in the knowledge spiral, also denoted the SECI model (Socialization, Externalization, Combination and Internalization). This model describes mechanisms of knowledge management according to the movement between tacit and explicit knowledge types and might involve passing knowledge on through silent practices, codification and embedding into social practices. These practices should be attuned to the business model, and from this also the organizations intellectual capital.
Once an organization has found its core focus, for example through an innovation process, the management of the organization is primarily concerned with **doing things right**. Here the managerial attention provided by the knowledge management strategy is an important driver of improving the resource-base of the organization, in turn building intellectual capital and the performance of the business model.

### 2.3 Reporting

In reporting about value creation, the notions of **doing the right things** and **doing things right** are combined. In the past decade, new forms of organization and ways of creating value have appeared. In conjunction with this, new technologies have also emerged. Together, these mechanisms of organization and technology leverage combinatorial innovations (Varian, 2010) by creating new spaces for value creation, new ways of serving customers, and sometimes entire new products. Consider Uber’s disruption of the taxi industry, how Airbnb currently challenges the hotel industry, and the way in which Skype set the standards for Internet-based phone services over a decade ago. Such disruptions (Christensen and Raynor, 2013) might radically alter the value creation in any given industry. Hence, this is also expected to alter the performance measurement information that is relevant for guiding managers’ decision-making and for disclosure to external stakeholders. In general, innovation is problematic in a reporting context, because it emerges as an expense or a liability and not something “of value” **per se**.

The Intellectual Capital Statement’s focus on use value means that it provides an early example of how the characteristics of business models might be injected into an accountability perspective (Nielsen and Roslender, 2015) as suggested by Jenkins (AICPA, 1994). More recently, the IIRC (2013) suggests that business models are at the core of an Integrated Reporting effort, together with a clear link to intellectual capital resources. The IIRC has been criticised for introducing its model of six different capitals and its idea of business models with a vague conceptualisation of how these elements fit together. It is especially difficult to commensurate the notions of value in Integrated Reporting with a broader understanding of value creation than to that of the shareholder (Tweedie et al., 2018).

While the Intellectual Capital Statement provides a link to knowledge management through the knowledge narrative and management challenges, by using narratives, figures and numbers, the connection to business models is more complex. At present, performance and KPI identification rests on the level of management models and frameworks such as the Balanced Scorecard or other performance scorecards (Nielsen and Roslender, 2015). One solution is to apply an ontology, like the 5-V ontology developed by Taran et al. (2016), to help organizations identify which exact business model configurations they are using. Different business models have different value drivers and thus their performance is distinct, and different from one another, according to their particular configuration. This will allow the identification of KPIs that are capable of communicating the performance of a given company, a notion that is forwarded by Nielsen et al. (2017) in their essay about **Killing the Balanced Scorecard**.

In assessing the notions of **doing the right things** the role of the business model disclosure is to judge whether the right business model is chosen for delivering a given value proposition to users. Assessing the **doing things right** dimension, is concerned with measuring how well is the business model performing, and how good the current knowledge management practices are at supporting that particular type of business model and in building the intellectual capital resources of the organization. The business reality of today verifies a value creation shift to intellectual capital and intellectual assets. Global companies such as Apple, Google, Facebook, Weibo, Spotify, Uber and Airbnb are all good illustrations of a trend going from the trading of products and services onto the trading of ideas and concepts within networks via new business models. Edvinsson (2013) argues that Apple is a tangible illustration of IC business transformation of this sort in that the company is making more revenue out of the trade on its network than sales of its actual devices. In this context, updated reporting models will be in growing demand.

### 3. Concluding remarks

According to Dane-Nielsen and Nielsen (2017), intellectual capital is central to all business models. Further, the Intellectual Capital Statement provides a robust link between intellectual capital and knowledge management which makes for a pragmatic methodology (see Nielsen et al., 2007). In order to detail these links, the prior discussions concerning innovation, management and reporting have been structured in Table 1, which thereby
summarizes the potential relationships between knowledge management, intellectual capital and business models.

Table 1: Overview of the relationships

<table>
<thead>
<tr>
<th>Doing the right things</th>
<th>Innovating</th>
<th>Managing</th>
<th>Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>The point of departure here is business model change, leading to different intellectual capital and thereby also adjusted knowledge management practices.</td>
<td>Concerned with producing adequate processes of sharing, building and measuring business models, intellectual capital and knowledge.</td>
<td>The role of business models, intellectual capital and knowledge management in value creation. Is it the right business model for the existing value proposition?</td>
<td></td>
</tr>
</tbody>
</table>

Table 1 illustrates that the relationship between knowledge management and business models has different characteristics depending on whether the focus is on innovating, managing or reporting and also across the concerns of doing the right things or doing things right. The role of intellectual capital likewise differs. In some instances, intellectual capital acts out a mediating role between knowledge management and business models, and in others it is the affecting or affected part. As these relationships are conceptually derived, their main purpose here is to provide a basis for further scrutiny, discussion and testing. They represent a number of propositions, which should be tested, validated or rejected, and thereby they offer a number of potential research directions.

3.1 Future directions related to innovating

Radical business model innovation may involve the development and utilization of new knowledge or new technologies. However, when depicted from a doing the right things perspective, it is typically a given business model innovation that affects the organization’s intellectual capital, which again affects the knowledge management focus. Future research should aim to study this causation as well as studying how different business models are contingent upon differences in knowledge management practices. Business model differences could be measured according to an ontology like the one developed by Taran et al. (2016). According to the Skandia Navigator approach for IC (Edvinsson, 1997), innovation is at the core of any business bottom line. Consequently, this dimension and its unique metrics are critical to bridge to management practices.

3.2 Future directions related to managing

In relation to the management perspective, doing the right things, is concerned with producing adequate processes of sharing, building and measuring both business models, intellectual capital and knowledge. Here the value driver perspective of business models (Nielsen et al., 2017) and the management challenge perspective of the Intellectual Capital Statement (Mouritsen et al., 2003) are important prerequisites for focussing the knowledge management effort. The research effort here should focus on identifying relationships between management processes and benchmarking processes that can create performance management systems which not only instigate control, but also create energy, inspiration and direction in the organization.

3.3 Future directions related to reporting

The mediating link applied in this paper, namely that of the Intellectual Capital Statement, was precisely concerned with depicting the organizations strategy for knowledge management and creating accountability around this effort. However, intellectual capital reporting has since failed as a vehicle for such disclosures (Roslender & Nielsen, 2017; Nielsen et al., 2017). One reason might be that intellectual capital reporting missed to integrate with innovation on the one hand and navigating the knowledge of organizations on the other. It is important that business stakeholders be alerted towards areas of lacking knowledge, as well as how to address such aspects. Currently new reporting vehicles such as EU-mandated business model reporting and the voluntary Integrated Reporting (IIRC, 2013) model, which also stresses the importance of business models, are entering the scene. Our knowledge of the pitfalls in intellectual capital reporting (Schaper et al., 2017)
coupled with the recent insights into benchmarking-oriented business model mappings (Tweedie et al., 2018; Taran et al., 2016) can help us understand how to overcome the problems that these new reporting vehicles will face.

Future research should focus on identifying whether organizations are applying the right business models for their cause, and then also how that business model is performing, both in terms of financial outcomes as well as a broader set of societal impacts. In here lies the true acknowledgement of the global importance of intellectual capital as a pivotal factor in the evolution of business practices, namely to create value for money products and services for customers, embed this in profitable business models, hence creating stable business ecosystems that over time lead to wealth creation for the good of society.

References


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Effective Knowledge Management and Organisational Learning in the Context of Sustainable Development

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Abstract: The aim of this paper is to explore how Knowledge Management (KM) and learning can be instrumental for governments’ policy making and implementation, and to analyse how KM with the consideration of local culture and a bottom-up approach can increase its effectiveness. The paper is composed of three main sections: first, a literature review to discuss knowledge and learning and ways it can be managed within an organisation; second, a case study on the KM strategy to achieve the Millennium Development Goals 4 and 5 relating to child and maternal health in Pakistan with highlights on the role played by the Lady Health Workers in KM; third, key findings, such as institutional arrangements for and social dimensions of KM, the importance of knowledge creation with a bottom-up approach, and people’s ability to transform tacit knowledge into explicit knowledge for it to be managed and to facilitate policy implementation is provided in the conclusion.

Keywords: knowledge management & organisational learning, MDGs and SDGs, Pakistan, lady health workers, a bottom-up approach, sustainable development.

“By working together, we can reinvent government in ways that matter to ordinary people everywhere.” – Ban Ki-Moon (UN, 2015-a, p. 75)

1. Introduction

The inter-connectivity of the world has made knowledge management (KM) essential for all sectors, to survive and to thrive in today’s fast changing business environment. For the public sector, the development of a nation will largely be defined by the capacity of its government to connect ‘dots’ when making and implementing policies, as issues, such as poverty, hunger, health, education, gender, water, energy, jobs, industry, inequality, cities, consumption, climate, ocean, land, governance, are interlinked.

The public sector when making policies for national development needs to recognise the interlinkages between different issues. For example, to increase economic growth, policy makers must take into account social needs, and at the same time address climate change and protect the planet (UN, 2016-b). KM, therefore, is required for government officials from different ministries and levels to learn from each other and connect “dots” for joint planning and implementation, horizontally at central governmental level, and vertically from national to local level. These multiple ways of KM are crucial in the 21st century, particularly for the implementation of internationally agreed development agendas, as they are cross-cutting and require policy coherence and local action for achievement.

The year 2015 witnessed the adoption of a series of important, inter-connected multilateral agreements: the Sendai Framework for Disaster Risk Reduction, the Addis Ababa Action Agenda, the 2030 Agenda for Sustainable Development, and the Paris Agreement on climate change (UN, 2016-a). Achieving these internationally agreed agendas had taken years of negotiation and consensus-building by States. After their adoption, the real work began. All States collectively share the responsibility to turn their commitments into actions for their achievement within the given deadlines.

For instance, for the implementation of the 2030 Agenda and its 17 Sustainable Development Goals (SDGs), efforts invested by governments at the beginning of the process are crucial (Stuart et al, 2016). The longer governments take to identify challenges, develop a strategy and associated action plans, the harder it will be to achieve the 2030 Agenda. Among efforts to be made, effective governance which leads to policy coherence and inter-ministerial collaboration horizontally and across administrative levels vertically is fundamental, as “[t]here has to be explicit recognition of the interlinkages between economic, social and environmental challenges, and an institutional set-up that does not make policy in silos” (ibid., p. 8).
For example, to achieve the 2030 Agenda and its associated SDGs, multi-sectoral joint efforts are required to realise sustainable development. It is, therefore, necessary to consider ways that KM can be supported by appropriate institutional arrangements and enabled by people-based factors to facilitate learning and transforming political commitments into reality.

The aim of this paper is to explore how KM and learning can be instrumental for governments’ policy implementation. Three main sections will follow this introduction.

First, a literature review will discuss knowledge and learning, and ways it can be managed within an organisation. It will provide a brief overview on institutional arrangements and KM factors, and how they affect KM and learning for policy outcomes. Second, the KM strategy for the implementation of Millennium Development Goals (MDGs) 4 (to reduce child mortality) and 5 (to improve maternal health) in Pakistan will serve as a case study to discuss its strengths and weaknesses in respect of the key factors identified in the literature review. Third, in the conclusion, key points as findings from the case study will be provided.

Institutional arrangements for and social dimensions of KM, the importance of knowledge creation with a bottom-up approach, and people’s ability to transform tacit knowledge into explicit knowledge will be highlighted.

2. Knowledge management and learning – a literature review

In the 21st century, technological development has facilitated rapid information sharing through multi-media, and consequently accelerated the change in all sectors. An organisation that values the role of human knowledge and learning for change adaptation will invest in KM, through both internal and external learning, to develop organisational effectiveness (Serrat, 2009). This is particularly important for the public sector, as its organisations are knowledge-intensive and the characteristic of most of them is having knowledge as one of their core products for the public (Willem and Buelens, 2007).

So, what is knowledge and how should it be managed for learning to be effective, when it applies to the public sector to facilitate their policy implementation in the context of sustainable development?

Knowledge

Applying knowledge and KM to increase organisational performance has drawn attention from all sectors. In a highly competitive business world – including in the public sector due to competition for budget allocation – for organisations to remain relevant and thrive, it is necessary to capture and manage knowledge embedded in the organisation (Lee and Choi, 2003; Ichijo and Nonaka, 1998). Definitions of knowledge that scholars provided may vary but most of them are in line with the definition provided by the Oxford living dictionaries: “1) facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject; and 2) awareness or familiarity gained by experience of a fact or situation” (Oxford, n.d.). The first definition refers mostly to explicit knowledge, and the second to tacit knowledge. This distinction has been broadly accepted by scholars (Polanyi, 1962, 1966).

Tacit knowledge concerns ‘know how’ and is considered ‘sticky’ as it is rooted in context and hard to be expressed and transferred; whereas explicit knowledge is more about content and concerns ‘know what’ and is assumed to be ‘leaky’ as it can be easily articulated and spread (Tagliaventi et al., 2010). Brown and Duguid (2001, p.332) suggest that “[w]hile explicit knowledge can be acquired and transferred by means of rules and norms, tacit knowledge is acquired and transmitted through the sharing of practices, i.e., through the full performance of a task, a job, or a profession”. Explicit knowledge is also considered easier to manage as often it links less to the context, comparing to tacit knowledge, so does not require its target audience to understand the larger system for its application (ibid.). In the case that knowledge requires multi-sectoral collaboration for its creation and transfer, KM becomes more complex as increased number of factors can enable or hinder its effectiveness (Andrews, 2010).

For knowledge to be managed, appropriate institutional arrangements are required (TRF, 2011). Beechler and Bird (1999) see that the effectiveness of organisational learning is defined by the efficiency of KM systems, processes and structures (as cited by Alavi et al., 2010). Whereas other scholars see the social factors within an organisation, such as people, culture and leadership, can greatly impact KM’s realisation (Lee and Choi, 2003;
Garvin et al., 2008). This brings us to explore further KM facilitators in terms of institutional arrangements and people-based enablers.

Institutional arrangements for KM: systems, processes, and structures

For knowledge to be managed, it is necessary to have a knowledge system so knowledge can be consistently generated and shared for learning to keep members close to the heart of operations. When knowledge is managed by an organisation as a whole, the organisation can be regarded as a knowledge system. The system can then operate knowledge in five steps: 1) construction/creation, 2) organisation, 3) storage/retrieval, 4) distribution, and 5) application (Pentland, 1995). These steps are often non-linear and concurrent, and need to be managed in a consistent manner (Lee and Choi, 2003).

Construction implies the creation of knowledge that is new to the organisation or its user community collectively. Knowledge then is organised to relate or integrated to existing knowledge, classified, and stored for institutional memory. With proper storage, knowledge, when needed, can then be retrieved, distributed, and communicated to users to facilitate organisational learning and support adaption of knowledge to the organisation. Once learning takes place and knowledge is applied in practice, it can enable the organisation to innovate and perform better and ensure its long-term success (Alavi et al., 2010, 2014). These five steps can be facilitated by computer-based information systems, paper-based systems – which is less and less, but still in use – and face-to-face social interaction (ibid.).

The above five steps considered by Pentland (1995) on knowledge systems are more appropriate for managing explicit knowledge. However, he also suggests tacit knowledge such as through social interaction, direct involvement, and reflective conversation as means to increase understanding. His suggestion is limited in scope but draws attention to the question of process, as within the context of KM, knowledge can be regarded as both an object and a process (Tan and Al-Hawamdeh, 2000). For knowledge, as an object, to be captured and applied, it has to go through a knowledge process (Nonaka and Takeuchi, 1995).

A knowledge process is about the process of behaviour and mindset of people involved in KM vis-à-vis knowledge (APO, 2013). Sanchez and Heene (1997) regard knowledge, not only as practical understanding, but also as a learning process that can facilitate operations to deliver results (as cited in Willem and Buelens, 2007). Along the same line, Williams et al., (1998) suggest that knowledge is about the perception viewed from the individual’s personal lens, which is part of tacit knowledge (as cited by Fowler and Pryke, 2003). Each individual’s education, experience and ability define this lens. Consequently, the capacity to intellectualise tacit knowledge and produce explicit knowledge varies. The knowledge outcome, therefore, depends largely on the degree of the ability of each individual, group, and organisation for KM and learning, both formally and informally (ibid.). Nonaka and Takeuchi suggest a knowledge spiral, which is an active continuous process for KM applying to individuals, groups, and organisations.

Figure 1: Nonaka and Takeuchi’s knowledge spiral, 1995, as cited by Fowler and Pryke, 2003

Graphist: Frederic Zanetta
This spiral process, which is more sophisticated than Pentland’s five steps, considers both tacit and explicit knowledge. The process begins with empathy and socialisation that brings up tacit and sympathised knowledge. Further reflection and discussion, individually or in a group, then facilitate externalisation of knowledge for it to become explicit and conceptual knowledge. Then, combining with existing knowledge and linking with other relevant knowledge, it becomes systematised explicit knowledge. After knowledge application involving ‘learning by doing’, it becomes operational knowledge. The knowledge acquired can then be internalised and turned to tacit knowledge by individuals having applied the knowledge. This spiral cycle can be repeated successively through social interaction between tacit and explicit knowledge. The outcome can be amplified continuously by individuals to a group and to an organisation (Fowler and Pryke, 2003). This amplification by individuals is highlighted by Takeuchi (1998) through knowledge creation by frontline employees, knowledge conversion by middle managers, and knowledge cohesion by top management. In this process, knowledge creation is considered fundamental by many scholars, for instance, Jenkin (2013, p. 97) suggests adding an information foraging step that “captures how individuals engage with sources of data and information as part of the learning process” linking to each individual’s initiation of tacit knowledge. Without knowledge creation, there will be no knowledge to manage.

The review and evaluation of KM is crucial in the process. Once knowledge has been processed, organisations need to evaluate and get regular feedback. The level of organisational effectiveness can be an indicator and considered as an important intermediate outcome of KM. Each successful result can further encourage employees to invest more effort in KM. With increased effectiveness, knowledge can be transformed into innovation and enhance organisational performance (Lee and Choi, 2003).

In addition to systems and processes, the third institutional arrangement as facilitator for KM is organisational structure.

Organisational structure can have a profound impact on the information flow and knowledge sharing within an organisation. Organisation theorists, such as Dalton et al. (1980), and Hage and Aiken (1967), consider three principle ‘structuring’ dimensions – specialisation, formalisation, and centralisation – that influence organisations’ decision-making (as cited by Andrews, 2010). For instance, in an organisation, the number of occupational specialisations is a determinant of its division of labour and defines the complexity of its organisational structure (Hage and Aiken, 1967). Where more variety of professional activities is found, there is a greater need for wider participation in the organisational decision-making and for better distribution and utilisation of knowledge by its employees (ibid.).

However, in the public sector, very often the structure and its division of responsibilities into independent professional silos impede KM and organisational learning that is crucial for the integration of policies and service delivery (Bundred, 2006). Furthermore, large organisations are often broken down into several levels from senior management team to the frontline delivery of public services. Without a structure to create an enabling environment for KM, it is challenging to overcome gaps for policies to be learnt and implemented throughout different levels. For example, middle ranking management groups in the organisational structure and their role in knowledge generation, access control and transfer across business units have been recognised (Nonaka and Takeuchi, 1995), but often they are blamed being the cause of ineffective organisational management and KM (Fowler and Pryke, 2003).

Scholars consider that a less formal structure – an organic structure – that is flexible and flat can encourage initiatives from employees and increase the adaptability of the organisation in a dynamic, complex and fast changing world (Andrews, 2010; Alavi et al, 2014; Amir et al, 2010). By the same token, Burns and Stalker (1961) suggest that an organisational structure with more openness and less formality in its system can promote employees’ pro-activeness and interaction, and as a result enhance their problem-solving capacity (as cited by Alavi et al, 2014).

Likewise, delegation of authority and decentralisation can reduce organisational rigidity and can enhance a sense of ownership and generate ideas as it implies the faith of senior managers in the capacity of middle managers to make and execute decisions (Alavi et al, 2014; Andrews, 2010). It also creates trusting relationships at different levels to encourage collaboration. Decentralisation also favours decision-making with a bottom-up approach, as it facilitates the participation of frontline workers and communities, and consequently the inception of their tacit knowledge. Knowledge can be created from their direct involvement,
such as in identification of problems and needs, project development and management. Their participation can further encourage local engagement and ownership for sustainability (UN, 2011).

However, researchers also point out that decentralisation, when uncoordinated, appears to diverge shared values and allow alternatives to emerge, undermining the benefits of a collective vision (Andrews, 2010). In a similar vein, Smith (1985) considers that decentralisation may have a negative impact on the public services provision at the local level when local public authorities are not as efficient as central governments (as cited by UN, 2011; Bossert et al., 2015).

Decentralisation, therefore, presents both an opportunity and a challenge for governments to manage knowledge for policy implementation. Effective KM can provide solutions. Nevertheless, to address challenges, it is necessary to understand public sector’s organisational structure, institutions and their effects in their own context, as well as ways to promote cross-boundary thinking.

In a nutshell, facilitated by appropriate KM systems, processes, and structures that an organisation puts in place, intra-organisational cooperation and acceptance of mutual accountability for KM can be increased (Sparrowe et al., 2001). KM enablers, such as people, culture, and leadership, can then be harnessed by such an enabling environment to support learning and contribute to senior managers’ decision-making and collective performance (Lee and Choi, 2003; Syed-Ikhsan and Rowland, 2004).

Knowledge management enablers: people, culture, and leadership

As knowledge is people-based, it is suggested that organisations are best viewed as “social community specialising in speed and efficiency in the creation and transfer of knowledge” (Kogut and Zander, 1996, p. 503). To this extent, appropriate KM systems, processes, and structures can intensify the social relations within an organisation for it to capture its social capital and facilitate learning and performing. This social capital according to Putnam (2000) includes “social networks and the norms of reciprocity and trustworthiness that arise from them” (as cited by Andrews, 2010, p. 585). Where social capital flourishes, the closer the linkages are between people and units, so to accelerate the knowledge spiral and enhance collaboration (Nonaka and Takeuchi, 1995). As a result, it generates more frequent interactions between members in different functions or departments and can speed up knowledge sharing and learning within an organisation.

The following section will focus on three human factors – people, culture, and leadership – as essential enablers to increase social capital for effective KM.

People are the agents of KM, as people decide to create and share knowledge, to learn further, and act accordingly (Syed-Ikhsan and Rowland, 2004). It is also people who translate their tacit knowledge into the organisation’s explicit knowledge. People are therefore the driving force behind KM. People need to be involved in the design of KM systems and processes and to assume responsibility for its success, for instance, for frontline workers and professionals’ commitments to knowledge creation and action generation in knowledge application (Argyris, 1977; Bostrom and Heinen, 1977; Mintrom, 1997). It is, therefore, indispensable to manage people for effective KM. This management needs to include managers at various levels – local line leaders, executive leaders, and internal networkers – to ensure a continuous interactive knowledge process involving both people at the top and frontline levels and organisational learning in an integrated way (Senge, 1996; Takeuchi, 1998).

Training, therefore, needs to be provided to all members of an organisation in a way that they retain the responsibility to share their knowledge through available facilities (computer, paper, face-to-face discussions). The more people are trained, the more positive relationship between users and knowledge systems will be created that leads to enhanced KM (Syed-Ikhsan and Rowland, 2004).

Having a culture of sharing knowledge is fundamental for KM. For knowledge sharing to become a continuous process, it requires an organisation culture to promote it consistently so it can become a shared mission among members (Stoddart, 2001). McDermott and O’Dell (2001) define culture as “the shared values, beliefs and practices of the people in the organisation” (as cited by Syed-Ikhsan and Rowland, 2004, p.100). As culture is shaped by people, human interaction and socialisation, such as trust and collaboration, can affect knowledge creation and KM (ibid.). In an organisation where people enjoy trusting relationship and learning becomes a
Culture, the likelihood that they share information and for KM to be successful is higher (Garvin et al., 2008). On the contrary, lack of trust can cause withholding information which is especially harmful when cross-functional or intra-organisational joint effort for knowledge creation is required (Lee and Choi. 2003).

To foster a culture to facilitate KM, leadership provided by the senior management team can have a positive effect, particularly on the creation of knowledge asset (Syedikhsan and Rowland, 2004). With clear directives, KM and learning can become a value of the organisation and owned by its members, who in turn can follow the agenda to share knowledge for it to be managed and further disseminated to the right people at the right time (Fenwick and McMillan, 2005). Therefore, leadership plays a decisive role in KM and can increase the effectiveness of knowledge transfer horizontally and vertically.

It is also recognised that leadership can reinforce learning (Garvin et al., 2008). Formal interventions from the top can provide guidance, create more structured groups for KM and learning, and improve organisational performance (Okhuysen and Eisenhardt, 2002). When leaders put emphasis on problem identification, knowledge creation and transfer, and reflective post-evaluations, the KM and learning activities are likely to proliferate across the organisation for it to increase efficiency and creativity and achieve its strategic innovation (Garvin et al., 2008; Crossan et al., 1999). The learning agenda provided by leaders, therefore, is key for KM and learning to happen at multi-levels (individual, group, and organisation) linking to social interactions within the organisation, for example with activities such as intuiting, interpreting, integrating, and institutionalising as suggested in the 4-I framework (Crossan et al., 1999).

**Figure 2:** Organisational learning as a dynamic process – 4-I model of an organisational learning (Crossan et al, 1999)

Graphist: Frederic Zanetta

Like the knowledge spiral, the 4-I framework recognises multi-level knowledge processes. While intuiting and integrating occur at the individual level, interpreting and integrating occur at the group level, and integrating and institutionalising occur at the organisational level (ibid.). With clear guidance and demonstration from leaders through their own behaviour for learning, the 4-I can be realised at all levels. It can facilitate for the practice to become a shared value so to tie the organisation together for learning to take place across the organisational structure.

In sum, the above literature review indicates that the level of institutional arrangements such as KM systems, processes, and structures including its three structuring dimensions – specialisation, formalisation and centralisation – defines the degree of opportunity that managers and employees can take initiatives with autonomy for KM and benefit its outcome for their performance. With a decentralised, flexible, less formal, flatter, and uncomplicated structure, the social capital within an organisation could be amplified by its members and a KM enabling culture sustained by leadership.
The following case study will examine the strengths and weaknesses of the KM strategy of Pakistan for the implementation of MDG 4 (to reduce child mortality) and MDG 5 (to improve maternal health). It will also consider the role of tacit knowledge, especially in respect of bottom-up processes for translating tacit knowledge into explicit knowledge.

3. Implementation of MDG 4 and 5 in Pakistan – a case study

In September 2000, the United Nations (UN) Millennium Declaration was adopted by Heads of Government, including Pakistan. Its associated MDGs, to be achieved by 2015, addressed extreme poverty in its various dimensions such as hunger, lack of primary education, gender inequality, child and maternal mortality, diseases, and environmental degradation.

However, development policies and their rhetoric have been challenging to translate into practice. In the implementation of the MDGs from 2001 to 2015, in some countries it took 10 years for governments to turn the goals into institutional commitments (Sarwa, 2015; Lucie et al. 2015). For policies requiring integration, horizontally to include multiple jurisdictions, and vertically through levels of government, the complexity involved increases (UN, 2015-b).

Pakistan’s context: health system and facility

Pakistan is administratively divided into four provinces (Punjab, Sindh, Khyber Pakhtunkhaw, and Baluchistan), the federal capital of Islamabad, and seven Federally Administered Tribal Areas. More than 73% of its population (189 million) live in rural areas (WB, 2015). Pakistan ranks in the Human Development Index the 147th out of 188 countries (UNDP, 2016).

![Pakistan's federal structure](image)

**Figure 3:** Pakistan’s federal structure (ANP=Awami National Party. IMR=infant mortality rate. MMR=maternal mortality ratio. ICT=Islamabad Capital Territory. FATA=Federally Administered Tribal Areas. (Nishtar et al., 2013-a)

Pakistan’s health services are ensured by public and private sectors. While the private health facilities tend to serve the affluent, the public sector serves the poor (Shaikh and Hatcher, 2005). The public health services are delivered at federal, provincial and district levels. Its network is composed of rural health centres (RHC), basic
health units (BHU), dispensaries, district and Tehsil headquarters hospitals and allied medical professionals (Wasti and Ahmad, 2017). Health in Pakistan has always received low fiscal support and poor political ownership (Bhutta et al, 2013). The government of Pakistan (GoP) spends only 0.9% of its gross domestic product (GDP) on health, which is low by any standard, even lower than Bangladesh (1.2%) and Sri Lanka (1.4%) (Nishtar et al., 2013-a; Shaikh and Hatcher, 2005). Consequently, the ratio of the availability of health professionals and one hospital bed versus population remains low – “the doctor population ratio stands at 1:997, dentist 1: 10’658, and hospital bed 1: 1’584” (Shaikh and Hatcher, 2005., p. 187).

To increase provision of primary health care and communication between the communities and the health system, the Lady Health Workers (LHWs) programs was launched by the GoP in 1994, and with time, it has gained an international reputation with their grass roots coverage plans (Hafeez et al. 2011). LHWs are recruited according to a well-defined process and selection criteria. After being trained at either a BHU or RHC (or a Tehsil headquarters hospital) for 15 months, they reach out to communities. Each is responsible for approximately 1’000 people’s health within a catchment area of 200 houses and are supported directly by the network (ibid.).

Country-wide the GoP has deployed 110’000 LHWs, whose peer status has effectively connected each patient to a government health facility (Zhu et al., 2014). In the areas served by the LHWs, the health indicators are better than the national average (Hafeez et al., 2011).

Pakistan’s achievement of the MDG 4 and 5
When the Millennium Declaration was adopted, Pakistan committed to achieving MDGs. For Pakistan, two important targets were MDG 4 and 5, as improving maternal, new born, and child health (MNCH) is essential for its development (Islam, 2004). Precisely, the government committed to:

1. Reducing the under-5 mortality rate: in infant mortality rate from 72 to <55 per 1’000 live births, and the new born mortality rate from 55 to <40 per 1’000 live births; and
2. Reducing the maternal mortality rate from 276 per 100’000 to 140 per 100’000 live births by 2015 (Mahmud et al., 2011).

However, since the government’s commitment, the pace to achieve these two goals had been slow. For both MDGs, as assessed by the government, it was unlikely that Pakistan would achieve their targets by 2015 (GoP, 2010). In 2011, the GoP therefore developed a KM strategy and implementation plans, effective from 2011 to 2015, for better making and applying policies and programs to achieve MDG 4 and 5 (MacDonald, n.d.; TRF, 2011). The strategy also set up KM functions in the health sector in selected provinces (Punjab and Khyber Pakhtunkhwa) and identified the KM role of the federal and provincial governments following the devolution of power in 2011.

KM strategy to support the achievement of the MDG 4 and 5 (TFR, 2011) – an analysis
For developing the strategy, the GoP conducted a series of consultations with stakeholders (federal and provincial governments, UN and donor agencies in country, other organisations and the private sector). Identified KM challenges included:

- lack of intermediary channels to link health authorities, workers, to users;
- inability to share broadly information and knowledge;
- absence of comprehensive and accessible information for policy makers and implementers;
- poor utilisation of information and communications technology (ICT) to facilitate KM; and
- need of multiple media support to develop an appropriate KM system suitable to local conditions (ibid.).

To address the challenges, stakeholders agreed on seven principles to develop this particular KM strategy. It should focus on MDG 4 and 5 for improving maternal, neonatal, and child health; be owned and driven by the Provinces; be grounded by institutional realities; be supported by provinces-national, provinces-provinces, and province-districts links; be able to demonstrate results; be mindful to key elements such as target users, organisations, thematic areas, communication mechanisms and tools; and be flexible, practical and tailored to each Province’s need (ibid.).
Within this context, the following analysis will firstly consider whether the measures contained in the KM strategy appear to cover the key themes identified in the literature review as being important for KM, namely institutional arrangements (systems, processes, and structures) and social interaction (people, culture, and leadership), so to examine the strengths and limitations of the strategy. Secondly, it will discuss the importance of bottom-up approach, including the involvement of frontline workers at the grass-root level in KM. Thirdly, the role of Lady Health Workers (LHWs) of Pakistan in KM, particularly in translating tacit knowledge to explicit knowledge to create knowledge, will be examined.

1. Institutional arrangements and social enablers

For the implementation of the strategy, the GoP suggested a few measures known as HOTT components – human resources, organisations/institutional arrangement, tools and technologies, thematic areas (TRF, 2011). These measures covered the factors discussed in the literature review, such as institutional arrangements (systems, processes, and structures) and social interaction (people, culture, and leadership). For instance:

- Systems: the strategy included KM into professional competency requirement and supported by human resource management;
- Processes: the strategy assessed existing KM efforts and the outcome supporting the development of the KM strategy for it to maximise its effect in identified thematic areas;
- Review and evaluation: the strategy developed indicators to measure KM’s intermediate outcome and progress made in health service delivery;
- Structures: the strategy provided a clear overview on the “know-how” and “know-what” for KM between federal-provinces and province-province;
- People and culture: the strategy suggested as first steps to determine ways people are connected socially and professionally, and provide training to people to understand and apply KM; and
- Leadership: the strategy suggested appointing a senior manager as champion to provide guidance and lead to new organisational structures to facilitate KM.

However, the strategy and its suggested implementation plans appear to put more emphasis on institutional arrangements to increase KM efficiency, for instance, the approach to oversight for the KM hub mechanism at the provincial level, as shown in Figure 4 (TRF, 2011). At this level, a high-level official such as the Health Secretary, should chair a technical working group – the KM Working Group – which would be convened by the Director of the Health Sector Reform Unit and serviced by relevant health units. It would “promote and oversee the implementation of systematic processes for the collection, analysis, expert review and communication of information and knowledge for achieving MDGs 4 and 5 in the Province” (TRF, 2011, p. 29).

![Figure 4: Approach to oversight for the KM hub mechanism at the provincial level, Pakistan](https://www.ejkm.com)

Graphist: Frederic Zanetta
This hub model and the strategy did set up a structure to involve not only key stakeholders internally but also externally including relevant UN agencies and other organisations, and provide an idea on knowledge flow, but only with managers as the target (TRF, 2011). The involvement of individuals at lower levels was not considered. Although the strategy highlighted the need for understanding ways people connect as one of the first steps to introduce KM, it did not provide guidance to strengthen social enablers, such as through people, culture, leadership, and the creation of an environment in which trust can flourish. Elements relating to the application of the knowledge spiral and the 4-I framework, as discussed before, were completely missing in its implementation plans. As a result, the expected outputs of the strategy were limited to focusing on improved organisational oversight, enhanced KM structure, and tools. It did not consider improved social enablers for KM and better cohesion of health policies and collaboration at federal and provincial levels for enhanced health outcome at the district and community levels.

2. **Bottom-up approach**

Despite the political will demonstrated through the 2009 Karachi Declaration for concerted effort at federal, provincial and district levels to improve health of mothers and children and family planning, the devolution of power from federal government to the provinces in Pakistan under the 18th Constitutional Amendment (effective 1 July 2011) had complicated the development and implementation of the KM strategy, as each province was then expected to develop its own population and health policy, and produce results (JSI, 2009; Nishtar et al., 2013-a).

With this power devolution, most of the responsibilities listed in the constitution, as well as the majority of preventive health programmes, were transferred to the provinces (TRF, 2011). The strategy, made after assessments at federal and provincial levels, defined KM functions and clear division of tasks. It stated that at the federal level, its KM responsibility was to collect and disseminate best practices, while at the provincial level, its responsibility was for routine data collection, its synthesis and communication (ibid.).

However, in this KM strategy, the structure was set in a formal way and the KM target audience was at decision-maker and manager’s levels. The institutional arrangements as demonstrated in the hub model also bypassed the involvement of health workers at the levels lower than provincial level managers. This formal approach and focus on the manager’s level could be explained by “the overall conservative feudal character of the broader society” of Pakistan as men occupy mostly managers or health policy makers’ positions (Islam, 2004, p. 4-5). It could have led to the non-inclusion of women health workers in KM because of their lack of access to decision-making processes and their lower social-economic status, and consequently “reinforced the gender bias of the health and care system” and had a negative impact on KM (Islam, 2004, p.5).

For instance, and surprisingly, the role of Lady Health Workers (LHWs) was barely mentioned in the KM strategy. The step of generating knowledge in the system by frontline health workers with a bottom-up approach was missing. Despite the challenges such as the lack of linkage between health authorities, workers and users and the inability to share information were identified, the strategy did not address and propose solutions. The KM systems, processes and structures were not made to facilitate knowledge creation. The important role of frontline health workers in knowledge creation for sharing and knowledge application after learning was ignored.

3. **Translating tacit knowledge into explicit knowledge for knowledge creation**

As discussed above, KM becomes complex where a greater variety of professional specialisations is found, as there is a greater need for wider participation in KM. For KM to improve maternal and child health, it needs to 
capture social issues as determinants of health, such as poverty, malnutrition, gender inequality, illiteracy etc. (Hafeez et al., 2011). In Pakistan, the lower status of women in the country is reflected in the poor provision of economic opportunities, nutritional deficit in women, and insufficient visits to hospitals for prenatal check-ups (Islam, 2004). These issues need to be considered in KM to provide a better picture to improve health. Thus, the involvement of frontline health workers to collect information and create knowledge is required.

Under the 18th Constitutional Amendment, the districts have been given administrative and financial autonomy in almost all sectors, including health (Shaikh and Hatcher, 2005). At the community level, LHWs have been “agents of change” by providing integrated preventive and curative health services to their neighbours, which is particularly needed by women and children in poor and underserved areas and for the achievement of the MDG 4 and 5 (Zhu et al., 2014, p. 3; Hafeez et al., 2011).
The LHW network, with its community-based presence and understanding of the local customs and languages, has been appreciated and enabled LHWs to play a catalyst role to bring neighbours closer (Hafeez et al. 2011). The social capital that they generate at the community level and its potential should not be neglected for KM. With appropriate training and recognition of their role and with improved social-economic status, LHWs can actively seek out information as required, forge information by translating tacit knowledge into explicit knowledge (Jenkin, 2013). The creation of knowledge in this way could provide a better picture of health to managers as it covers areas of social determinants of health and solutions could be found with an integrated approach.

In fact, LHWs have been the agent and starting point at the individual and group levels for KM, and for knowledge application. They have been performing intuiting, interpreting, and integrating – the first three steps of the 4-I framework of organisational learning (Crossan et al., 1999). With training, LHWs could, by interpreting the observations and experiences acquired from their family visits, to create required explicit knowledge from tacit knowledge. This knowledge could then be transferred to Lady Health Supervisors and then as a group, with interpreting and integrating, to generate knowledge at the community and district levels. Knowledge could then be forwarded for provincial level managers’ collection, conversion, monitoring and evaluation. Supported by an adequate KM system, knowledge could be institutionalised to inform policy makers of the GoP. As the performance of LHWs is critical for the provision of essential health services to the community in Pakistan, the GoP might benefit from further investment in LHWs’ development to enhance their capacity, so that relevant knowledge could be generated, managed, and applied for health improvement (Islam, 2004; Hafeez et al., 2011; Sabih et al., 2010).

4. Conclusion

For KM to support policy making and implementation, knowledge needs first to be created, including through the transformation of tacit knowledge into explicit knowledge. It needs to involve trained community-based workers so their inputs into KM systems and outputs for results become meaningful. Pakistan’s KM strategy for achieving MDG 4 and 5 was made with managers as their target audience. Though managers could increase the likelihood of KM through fostering a knowledge sharing culture, they would need knowledge to be generated by frontline health workers. The case study demonstrates the value of LHWs in knowledge creation, not only in health but also in areas of social determinants of health. LHWs, with training, could be equipped with necessary skills, as indicated in the 4-I Framework, to take note of their findings and translate the information into explicit knowledge for sharing and application by others.

The optimisation of the LHW network and LHWs’ role for them to become a key for KM could promote improvement of health and related social development at local communities (Nishtar et al, 2013-b; Bhutta et al., 2013).

The GoP’s investment to enhance LHWs would need to combine with efforts to “better focus on equity, community participation, and inter-sectoral action on social determinants of health”, so that the LHWs could become an integral component of district health system operating in the framework of Primary Health Care of Pakistan to sustain its benefits (Hafeez et al., 2011, p. 214). A well performing district health system can then empower health policy implementation at provincial and national levels (Sabih et al., 2010).

In conclusion, users and managers of knowledge need to jointly assess the knowledge requirements of the organisation to develop appropriate systems, processes, and organisational structures and to put them in place. It is necessary to identify who are the knowledge holders (people) in different departments at various levels and their ways to connect. It is also imperative to understand in what kind of environment (culture) the knowledge is to be shared and with whom, who leads and how (leadership), and what kind of outcome can be expected at different KM stages to facilitate evaluation. Solutions identified and supported by leaders could enhance the KM outcome. Special attention should be paid to knowledge creators, such as frontline workers who can transform tacit knowledge into explicit knowledge for bottom-up sharing and organisational learning.

The same approach applies to KM in the context of sustainable development, for example to achieve SDGs. For cross-sectoral policies to be implemented, relevant knowledge needs to be first created and shared by individuals or groups. The sharing could be challenging in the public sector due to the hierarchical and
bureaucratic setting of government agencies (Liebowitz and Chen, 2003). However, with appropriate institutional arrangements and commitment of employees and leadership to foster an enabling culture, knowledge, as well as know-how and skills lodged in an organisation, can be better captured and shared for learning and innovation (Andrews, 2010). The involvement from frontline workers to government officials could facilitate KM operations horizontally and vertically in a collaborative culture. The knowledge provided could then support government’s policy making and implementation, for instance to achieve sustainable development in an integrated way.

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Editorial for EJKM Volume 16 Issue 1

Trust And Corporate Reporting

When looking at the papers in this issue of EJKM, two papers resonate with issues that I have been thinking about recently, and which I believe are important issues for knowledge management and intellectual capital. These are the role of trust (Lopez-Fresno et al., 2018) and corporate reporting (intellectual capital reporting) (Nielsen, 2018). I argue that these two issues go hand in hand and are at the heart of future practice in the corporate reporting of non-financial information.

There is no doubt we have progressed far beyond the need to justify the ways businesses manage, measure, and report financial and non-financial information to investors and other stakeholders. However, the landscape of reporting has historically been confusing as it is rooted in internal management requirements, some part of which is disclosed externally (Dumay and Roslender, 2013; Dumay, 2016). Unfortunately, many good ideas such as intellectual capital reporting, have fallen by the wayside as nothing more than a passing management fad. There is no evidence that firms are continuing to disclose intellectual capital purposely (Dumay, 2016; Nielsen et al., 2016). As a practice, it is stone cold dead.

Despite the demise of intellectual capital reporting, we are witnessing something of a revival in the guise of integrated reporting, which includes financial, manufactured, and natural capitals alongside the traditional human, relational, and structural (called intellectual in the <IR> framework) capitals (International Integrated Reporting Council (IIRC), 2013). Yet, <IR> has still not captured the hearts and minds of report preparers, and only a limited number of companies have begun to issue integrated reports. Currently, the take-up of <IR> is considerably less than the Global Reporting Initiative (GRI, 2013), and certainly has not become the corporate reporting norm the IIRC desires to complement annual reports (Dumay et al., 2017).

The groundswell is similar to that of intellectual capital reporting over a decade ago. As a movement, it caught the attention of many companies, but never really progressed beyond the organisations involved in developing its frameworks (Nielsen et al., 2016; Schaper et al., 2017). The same can be said of many of the companies issuing so-called integrated reports because many belong (or did belong) to the IIRC’s Pilot Reporting Network. Additionally, as Dumay et al. (2017) point out, many of the integrated reports issued today lack both form and substance. The majority claim to be integrated reports but do not even mention any of the six capitals (see also Chen and Perrin, 2017). Thus, for those hoping for a revival of intellectual capital disclosures through <IR>, the news is not good. The patient is not quite dead yet, but it certainly seems to be feeling unwell.

So what has this all got to do with trust, you ask? And rightly so. Trust is a key element in another form of reporting being ushered in by the EU Directive 2014/95/EU (European Union, 2014). The Directive “as regards [to the] disclosure of non-financial and diversity information by certain large undertakings and groups” has now transposed into law for all EU Member states. In short, about 6000 European companies with 500 or more employees will now need to issue a non-financial report for the 2017 reporting year. The report must contain information about concerns the European Parliament has with companies and their policies and processes regarding environmental matters, social and employee-related matters, respect for human rights, anti-corruption and bribery matters, and supply and subcontracting chains. The main reason for these disclosures is the EU Parliament’s desire to rebuild trust with “investors and consumers” (European Union, 2014, p. 1).

To many, reading that businesses need to rebuild trust with investors and consumers may seem like a throwaway line buried in a piece of European legislation. However, if investors and consumers trusted companies, the legislation would not be needed, and the European Parliament would not be forced to acknowledge “the importance of businesses divulging” more information to increase “investor and consumer trust” (European Union, 2014, p. 1). The emphasis on “divulging” is important because the deep dark secrets of businesses keep surfacing. The very businesses we looked up to as bedrocks of the economy continue to provoke mistrust. The recent “defeat device” scandal involving Volkswagen is a prime example of how investor and consumer trust was destroyed in a heartbeat. As a result, Volkswagen has needed to transform itself as a...
company to regain that trust. The scandal cost CEO Martin Winterkom his job, and in the days after the scandal broke, shares in Volkswagen dropped from US$160 to a little over US$110, wiping out billions in shareholder value. Volkswagen also faced costs for recalling all vehicles and billions in fines (Snyder & Jones, 2015). In 2017 so far, VW has reached settlements and paid fines of over US$22 billion in the US with more still to come. The penalties Europe will impose are still looming (Ewing & Boudette, 2017). In an attempt to recover from the scandal with a move away from diesel towards battery-powered vehicles, VW announced in November 2016 that it would shed over 30,000 jobs, including 23,000 in Germany. (McHugh, 2016). Thus, investors, consumers, employees, their families, and anyone closely associated with Volkswagen has suffered. With scandals like Volkswagen, it is no wonder that trust in companies to do the right thing is suffering.

But how real is this trust deficit? According to the latest Edelman trust-barometer report, people in Europe are generally distrustful of the four pillars of society – government, the media, non-government organisations, and of course, business.1 According to the Edelman report, trust is scored on a 1 to 100 scale with 100 as the highest level of trust. In the survey, all European countries had scores below 50, except the Netherlands (54), which had a neutral score that closely borders on the realm of distrust. Countries like Spain (47), Italy (43), Germany (41), France (40), Poland (39), the UK (39), and Ireland (38) have a populous who do not trust the institutions they rely on as foundations of society and the economy. However, with trust so low, how can investors and consumers have trust in companies who continue to reel from one scandal after another?

The EU Directive is a demonstrable example of how business, investors, consumers, and the EU Parliament is trying to rebuild the last shreds of trust in the establishment. However, the EU Directive does not endorse any particular framework for divulging more information, leaving it up to individual companies to choose their preferred methods of disclosure (Frank Bold, 2017). In the rush to comply with the Directive, frameworks such as integrated reporting and the GRI seem the likely candidates for a revival in divulging non-financial information through reporting (Dumay et al., 2017). In that race, the GRI appears to be the prime candidate since it has already published guidance on how to use the GRI to comply with the EU Directive (GRI and Global Sustainability Standards Board, 2017); such detailed guidance is not available for <IR>.

For researchers in knowledge management and intellectual capital, this presents an opportunity to investigate the systems and processes companies in the EU will use or need to change to comply with the Directive. Will companies simply make slight changes to their output to comply, considering that most large companies already use the GRI? Will it just be “business as usual” as has happened in other jurisdictions when a new reporting requirement becomes mandated (Dumay and Hossain, Forthcoming)? I hope that EJKM readers will explore these changes and contribute to the needed debates in academia, practice, and society to try to rebuild trust in the very institutions that should be bedrocks in our lives.

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1 See [https://www.edelman.com/trust-barometer](https://www.edelman.com/trust-barometer)

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