Middle Management Knowledge by Possession and Position: A Panoptic Examination of Individual Knowledge Sharing Influences

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Abstract: This paper elucidates the spectra of influences that impact the intra-organisational tacit and explicit knowledge sharing behaviour of the middle line, a boundary spanning layer highly capable to influence, inform and transform. The approach addresses a deficiency in research that affords an eclectic perspective across both knowledge types simultaneously and at an individual level of analysis. Advancing Ipe's (2003) conceptual work, the Multidimensional Model of Individual Knowledge Sharing Influences integrates robust and multi-disciplinary theoretical exposition with empirical validation in four leading UK Communication Sector operators. The model encapsulates the direct influence factors of Motivation to Share, Nature of Knowledge, Opportunity to Share, Culture and the Nature of the Individual. Organisational Velocity provides an original conceptualisation of the continual, episodic and ambiguous change that reflects reality in many post-industrial settings and is expressed as the tension between centrifugal and centripetal forces acting on the other factors. All six dimensions are shown to impact individual knowledge sharing practice, with underexplored constructs such as personality traits and aspects of demography emerging as significant. Organisational Velocity can operate in a moderating and primarily centrifugal capacity on Motivation to Share, Opportunities to Share and the Nature of the Individual. The study demonstrates that a panoptic, pluralistic and interdisciplinary perspective combining human, social, technological and contextual factors must be considered to understand sharing behaviour and optimise knowledge management interventions. A particular element may not be evaluated in isolation. Further, when factor dynamics are sub-optimum, the middle line may pragmatically orientate towards personal knowledge management mechanisms. Evidence of hoarding, hiding or disengagement from sharing is identified with some managers electing to utilise their knowledge in possession and network positional opportunity to generate rent in alignment with individual and affiliated group interests, negating its aggregation for wider organisational benefit. Implications for research and practice are fully explored.

Keywords: knowledge sharing, middle management, individual knowledge sharing influences model, organisational velocity, personal knowledge management, knowledge hoarding, hiding and disengagement

1. Introduction

Despite the "exponential growth of knowledge" (Sammons 2005, xiii), there remains a lack of holistic understanding of the factors which influence individual sharing behaviour. Many studies are wholly conceptual (Ipe 2003) or direct empirical exploration to a specific knowledge sharing factor (Al-Adaileh and Al-Atawi 2011) or a limited number of influences (Bartol and Srivastava 2002). Extant research also often fails to distinguish between knowledge types in its methodological approach (Kuo and Young 2008) or will consider one form in isolation (Lin 2007). These critical problem characteristics serve to catalyse, introduce and illustrate the overarching focus of this study, a panoptic perspective which comprises human, social, technological and contextual dimensions at an individual level of analysis. It considers both tacit and explicit knowledge and integrates theoretical exposition with empirical validation to align with the complex nature of the subject domain.

Knowledge sharing is a multidimensional, multifaceted and multi-mediated behavioural process, voluntary in nature and nebulous in definition and scope. It is broadly considered the determining factor in knowledge management success and strongly associated with achieving competitive advantage (Jackson et al. 2006). Alternative terms include knowledge distribution and knowledge diffusion (Dixon 2000) which emphasise fluidity; knowledge transaction (Tyagi and Shinde 2010) and knowledge exchange (Hsu and Tzeng 2010) which denote an interchange relationship and knowledge transfer which focuses on its movement to larger organisational entities (Ipe 2003).

Knowledge exists across multiple organisational levels and may be transferred in different forms and directions but is typically controlled at the level of the individual (***Ipe*** 2003). ***I***ntra-organisational exchange emerges from individual motivations (Bock et al. 2005) and consequent actions and interactions (Foss 2007). The capacity to leverage knowledge assets is therefore dependent on human capital: the individuals, who create, use and critically, can elect to share what they know.

Exchange ***remains a complex and often unnatural process with d***iverse challenges identified across multiple dimensions. These include elaborate networks, free-riding, conflicting values, lack of time or tools, and socio-cultural or power issues (Riege 2005). Transferability problems relate to its very nature with tacit knowledge difficult to express and share due to its sticky, experiential, intuitive, emotional and sense-making properties, contrasting with

explicit knowledge which is more accessible, systematic, conscious to its holder and capable of codification, articulation, diffusion and decontextualisation (Collins 2010).

Indisposition to share can be a dominating organisational reality (Kukko and Helander 2012). This may reflect the "value-laden" nature of knowledge (Greenhalgh and Wieringa 2011, p501) and the increasingly recognised but inadequately understood role and values of personal knowledge management (Cheong 2011). This is characterised by the individual enquiry, self-management and self-focus of knowledge workers, who make informed choices regarding transfer practices. Knowledge can afford bargaining power and may lead to primacy of concern for the individual rather than organisational good (Osterloh 2006), influencing decisions to hide, hoard or disengage in sharing processes (Ford 2008).

No dichotomy exists between knowledge sharing and knowledge hoarding or hiding behaviour. Hoarding is essentially the passive accumulation of knowledge which may / may not be shared in the future. Knowledge hiding involves its active, intentional concealment within dyadic exchanges and may comprise being evasive, using rationalisation or feigning ignorance when a request from another individual has been made for its use (Connelly et al. 2012; Peng 2013). Finally, disengagement is defined as a distinct behaviour whereby an individual neither shares nor actively hoards or hides their knowledge (Ford 2008).

2. Middle management role

There is no unifying definition of 'middle manager' but hierarchy emerges as a principal focus. In this research, a middle manager is defined as an individual with management responsibility and a minimum of two levels of staff below them whilst possessing a functional speciality (Conway and Monks 2011). There is conflicting empirical evidence regarding the future impact of middle management (Marichal and Segers 2012) but this paper opines that the layer is critical ***due to its*** *capacity to influence* (Boston Consulting Group 2010). Incumbents benefit from boundary spanning positions (Lin 2007) that enable vertical and horizontal relationship building (Gaál, Szabó and Csepregi 2013), addressing structural holes and supporting knowledge sharing practices. Middle managers also possess a *capacity to transform,* using strategic sense-making capabilities to perform analytic, intuitive, bricoleur and pragmatic roles to create, integrate and share knowledge (Eaves 2013) and energise *ba* (Nonaka and Von Krogh 2009).

A move beyond a relatively passive to more active position is identified, with middle management contributing and influencing strategy development, organisational transformation and leadership (Marichal and Segers 2012). This demonstrates a capacity to progress from informed change intermediaries to *informing agents of change*. The developing association between middle managers and a disposition to action is congruent with the pragmatic depiction of knowledge described by James (2000) and the intelligent action opined by Dewey (1920). Conversely, the antithesis between the demands placed upon the middle line and the benefit gained and moreover, expected from this level is frequently overlooked (Boston Consulting Group 2010). This synopsis elucidates the rationale to focus the study at this critical middle management layer.

3. Ipe's theoretical drivers of knowledge sharing behaviour

Ipe (2003) opines that individual knowledge sharing is influenced by Motivation to Share, the Nature of Knowledge, Opportunity to Share and Culture. Although soundly based on a significant literature review, it is argued that the relative importance and interaction of these factors is not adequately explored, nor the underlying constructs fully substantiated. The resultant conceptual model does not consider a breadth of influencing factors and is perceived to be overly reductionist and insufficient to reflect the range of potential contributory issues and a holistic treatment of individuals.

Specifically, Ipe assumes that individuals are homogenous. The author asserts that this view negates the potential for differences in response to context and stimuli to be appropriately addressed. It is argued that individuals are not homogeneous in respect to their motivations (McGregor and Cutcher-Gershenfeld 2006) or emotions (Pfister and Böhm (2008) but a dominant force may be determinative.

3.1 A multidimensional model of individual knowledge sharing influences

Reflecting on the critical analysis of Ipe's framework, an expansive, multidisciplinary literature review was undertaken. Studies were selected the basis of *foci* (outcomes, methodological approach, underlying theory); *contribution to goals* (issue identification, criticism, synthesis); and *coverage* (multi-disciplinary, emergent nature, authority). The approach was narrative but incorporating systematic review practices. Development also benefited from primary research

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findings (Eaves 2013), alongside peer and expert-based discussions until saturation was achieved. The factors and constructs identified for the new model are now explicated.

3.1.1 Opportunities to share factor

In order to share knowledge, opportunities must be available for organisational actors to do so. These may be formal or informal in nature and span individual, social, organisational and technological dimensions including physical and virtual contexts. The constructs aligned to this factor are elucidated in Table 1.

Table 1: Opportunities to share constructs

Constructs	Primary Reference
Knowledge Sharing Tools/Techniques	Bartholomew (2005)
Knowledge Management Team Presence	Bartholomew (2005)
Knowledge Management Strategy (Individual/Organisational)	Wei, Choy and Yew (2009)
Social Network	Chow and Chan (2008)
Structure and Hierarchy	Wei, Choy and Yew (2009)
Perceived Behavioural Control	Ajzen (2002)
Managerial Role	Refaiy and Labib (2009)
HRM Practices	Lepak and Snell (2002)
Time	Kankanhalli, Tan and Wei (2005)
ICT	Teerajetgul, Chareonngam **and** Wethyavivorn **(2009)**

3.1.2 Motivation to share factor

Motivation facilitates knowledge sharing behaviour through the complex processes of socialization, externalization and/or combination. It may be considered from an autonomous or controlled perspective with theories of motivation content or process based affording an emphasis on Instinct, Socio-biology, Drive, Incentive or Humanism. Internal, intrinsic aspects can impel individual action whilst external dimensions may be action inducing. Bock et al. (2005) stress the importance of improving understanding of individual-level motivations. Aligned constructs are detailed in Table 2.

Table 2: Motivation to share constructs

Construct (Intrinsic Motivators)	Primary Reference
Intention to Share	Bock et al. (2005)
Emotion	Van den Hooff, Schouten and Simonovksi (2011)
Eagerness to Share	De Vries, Van den Hooff and De Ridder (2006)
Image	Kankanhalli, Tan and Wei (2005)
Sense of Self-Worth	Bock et al. (2005)
Commitment	De Vries, Van den Hooff and De Ridder (2006)
Power	Kankanhalli, Tan and Wei (2005)
Knowledge Ownership (Individual/Department/Organisation)	Constant, **Kiesler and Sproull** (1994)
Construct (Extrinsic Motivators)	
Willingness to Share	De Vries, Van den Hooff and De Ridder (2006)
Sharer-Receiver Relationship	Lichtenstein and Hunter (2005)
Trust	Teerajetgul, Chareonngam **and** Wethyavivorn **(2009)**
Distributive Justice	***Reychav*** and ***Weisberg*** (2009)
Procedural Justice	***Moorman (1991)***
Pay Satisfaction	Sweeney and McFarlin (2005)

3.1.3 Nature of knowledge factor

This moves beyond the consideration of a tacit or explicit distinction to reflect knowledge type based on an operational (daily norms), procedural (task execution), process (overall systems-level) or product (existent/new product development) perspective. The task environment can be a source of uncertainty and its characteristics are explored via the dimensions of equivocality, uniqueness and **interdependence. Further, k**nowledge auditing is incorporated as its use can facilitate an understanding of how well internal activities are meeting organisational goals, whilst identifying potential knowledge stores. Aligned constructs are presented in Table 3.

Table 3: Nature of knowledge constructs

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Construct	Primary Reference
Knowledge Type	Huysman and de Wit (2010)
Task Equivocality	Van Den Hooff and Huysman (2009)
Task Uniqueness	Lepak and Snell (2002)
Task Interdependence	Jarvenpaa and Staples (2001)
Knowledge Auditing	Bartholomew (2005)

3.1.4 Culture factor

Ipe (2003) presents culture as the primary factor in knowledge sharing behaviour, influencing all others. Every actor possesses personal values, beliefs and experiences which influence their perceptions, interpretations and actions. These combine with the collective norms, practices, values and history which intimate organisational culture, alongside dimensions such as espoused corporate vision and views of senior management support. This creates a powerful and multidimensional dynamic which if in synthesis, can establish a mandate to share (Lin 2007). Culture is a distinct factor in this model with questions primarily influenced by Bock et al. (2005) and Chen and Liang (2005).

3.1.5 Nature of the individual factor

This original factor considers the impact of demography and specific personality traits, aspects which are underexplored. Demographics are frequently addressed as a descriptive statistic only and where direct research is identified, ambiguity and conflicting findings are evidenced. Further, the potential for personal dispositions to be influential, specifically the traits of agreeableness, conscientiousness and openness, has been empirically explored in one study which finds high scores afford a positive relationship with sharing behaviour (Matzler et al. 2008). Agreeableness and conscientiousness align with the construct of allocentric personality employed in this work. No salient research regarding ideocentric personality traits is observed.

The characteristics described are typically either static or evolve over an extended period of time. It is argued therefore that they should be considered as distinct from the more contextually influenced and variable aspects aligned with (intrinsic) Motivation to Share. The constructs associated with this factor are elucidated in Table 4.

Table 4: Nature of the individual constructs

Construct	Primary Reference
Allocentric Personality	Matzler et al. (2008)
Ideocentric Personality	Matzler et al. (2008)
Gender	Harrison and Mason (2007)
Function	Riege (2005)
Education Level	Keyes (2008)
Certification Type	Eaves (2013)
Role Experience	Bakker et al. (2006)
Organisation Tenure	Ojha (2005)
Sectoral Tenure	Eaves (2013)

3.1.6 Organisational velocity

This potential moderating influence advances the environmental velocity and knowledge intensity model of Jarzabkowski and Wilson (2006). It is opined that velocity can also be an organisational characteristic as within an industry similar size market players are far from homogeneous in their internal environments. The following definition is offered:

> *"Accelerated rates of discontinuous change: complex, dynamic, multi-dimensional and multi-faceted in nature, these can puncture the organisational equilibrium and are considered continually episodic".*

Adopting a pragmatic perspective, this original conceptualisation builds on elements of existent theories of change, specifically advancing Weick and Quinn's (1999) work on two distinct types. Continuous change is described as "constant, evolving, cumulative" (p366) whilst episodic change is "infrequent, discontinuous, and intentional" (p365). It is argued that this polarity, although considered more representative than the static, linear and rational orientation of authors such as Lewin (1951), still does not reflect the reality of increasingly uncertain environments.

In such cases, the tempo of change may almost be described as continually episodic. It is constant yet not cumulative, with strategic direction ambiguous and moving; it is discontinuous in terms of type and scale but not in frequency,

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suggesting that effective adaptation is not attained (Eaves 2013). Synthesising the factor review, Figure 1 introduces the resultant conceptual framework.

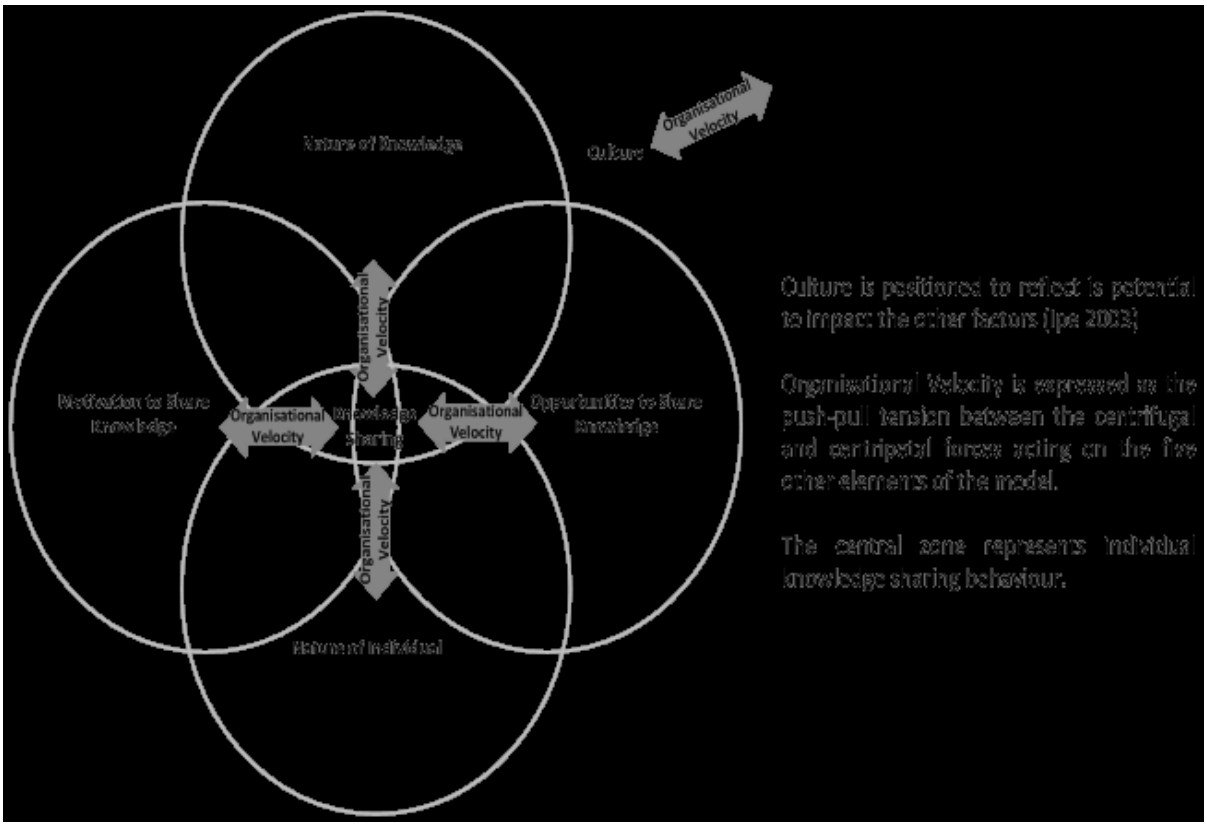

Figure 1: Conceptual multidimensional model of individual knowledge sharing influences

4. Methodology

4.1 Research setting

The UK communications sector exhibits high environmental velocity and knowledge intensity levels (Jarzabkowski and Wilson 2006). Diverse challenges such as complex consumer behaviours, strong competition and convergence across data architecture, products and services, necessitates rapid organisational and technical innovation and increases dependence on effective knowledge sharing. Four leading operators by market share are within scope, of which Firm A is established to represent high Organisational Velocity with a fluid and equivocal business model, blurred knowledge management vision and levels of continually abrupt, ambiguous and non-linear change. This is adjunct to the more stable organisational velocity identified across its three principal competitors (Eaves 2013) and affords a rich opportunity for comparative evaluation, as depicted in Figure 2.

4.2 Model validation strategy

Timely access to the field was secured by building formal and informal gatekeeper relationships. Instrument development benefited from the capacity to integrate the extensive literature review with the findings of an explorative pragmatic mixed-methods case study within one operator, enabling nuanced understanding of patterns and perceptions of knowledge sharing in practice (Eaves 2013). This facilitated the capability for refined model validation across four leading organisations, serving to provide exploratory assessment of how the identified influence factors and aligned constructs apply.

Construct measurement utilised or augmented existing scales where appropriate, selected on the basis of scope, relevance and demonstration of dimensionality, reliability and validity. Multiple-item construct measures were used extensively to support reliability and reduce the impact of social desirability bias. The dependent variables for the survey are tacit knowledge sharing behaviour and explicit knowledge sharing behaviour, conceptualised as the degree to which an individual collects and disseminates acquired job-related tacit or explicit knowledge within their

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organisation. These were measured across questions employed or adapted from the established behaviour scales of Yi (2009) and ***Reychav*** and ***Weisberg*** (2009).

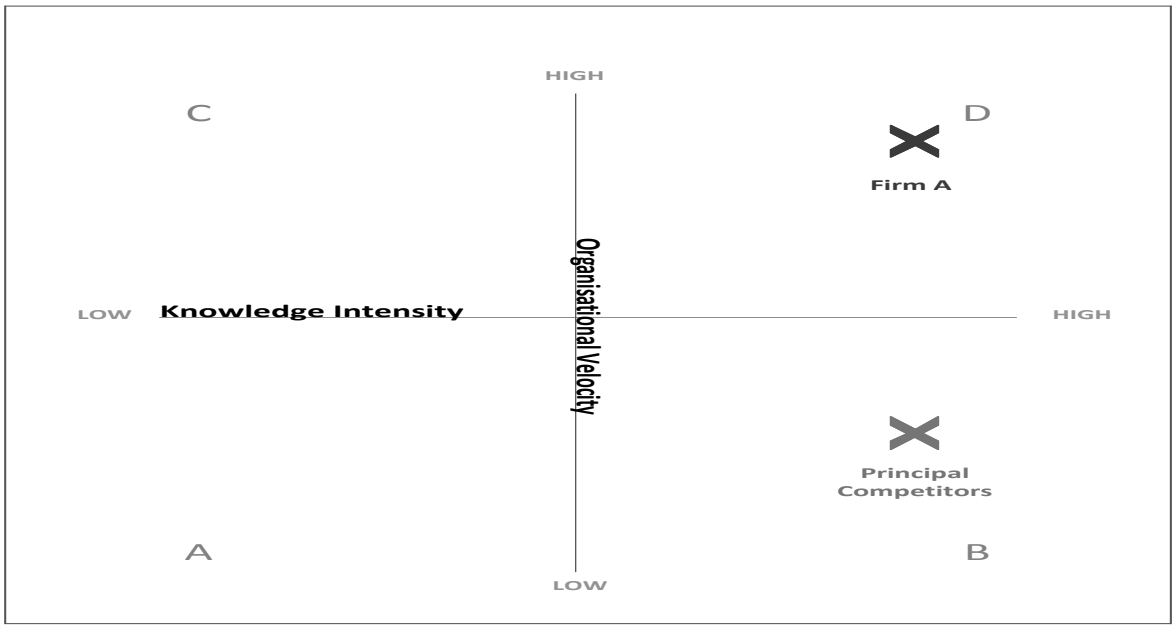

Figure 2: Organisational velocity and knowledge intensity conceptual model for Firm A versus principal competitors

Independent variables were aligned across the five core influence factors in the model as previously detailed. The conceptualisation of Organisational Velocity was not measured directly by the survey but via a comparative analysis of the resultant data in respect to high Organisational Velocity context Firm A and its stable context competitors as a group. A Likert scale was adopted throughout to provide depth of attitudinal measurement. A five point scale was selected to help reduce bias and room for interpretation (Stewart and Rigg 2011), which was anchored at pole extremes from *1-Strongly Disagree* to *5-Strongly Agree*.

Dr Gordon Rugg from Keele University, a knowledge elicitation expert, conducted content validity analysis on construct design and survey wording, with focus directed at reducing self-reporting bias. Indeed, despite the limitations of self-reporting, the perceptions of individual organisational actors are critical as it is frequently these perceived elements which guide decision-making (Duncan 1972), with natural implications for sharing behaviour. A pre-test was performed to evaluate specification, framing, ordering, usability and phrasing to reduce ambiguity and the potential of non-response. Purposeful sampling was adopted to identify middle manager respondents (N=78) via web-based survey distribution in Q3 2012.

5. Findings and integrated discussion

The data set comprised a majority of males (N=60) aged 50-59 (N=30) and with sectoral experience of 15+ years (N=48), aligning with the UK employment profile of this industry. Reliability analyses were conducted to determine internal consistency reliability, achieving acceptable Cronbach Alpha coefficients above .70 for all scales. A synopsis of correlation results is provided alongside full presentation of regression findings for the four organisations as one group, prior to subsequent consideration of Organisational Velocity. Attention is drawn to the most notable results, based on either the strength of the association, its implications or variance from extant research or literature.

5.1 Correlation analysis for dependent variables

Correlations were conducted in order to evaluate the association between the initial included measures and the two dependent variables; Tacit Knowledge Sharing Behaviour and Explicit Knowledge Sharing Behaviour. Pearson's correlation coefficient was utilised to determine whether a significant association exists between Tacit Knowledge Sharing Behaviour and Explicit Knowledge Sharing Behaviour. A strong, significant and positive correlation was found, with $r = .526$, $p < .001$.

This result demonstrates that respondents with higher scores on one of these measures had significantly higher scores on the second measure as illustrated in Figure 3. This finding is consistent with knowledge conversion theory which

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reflects that tacit and explicit knowledge are affected by each other and complementary in nature (Nonaka and Von Krogh 2009).

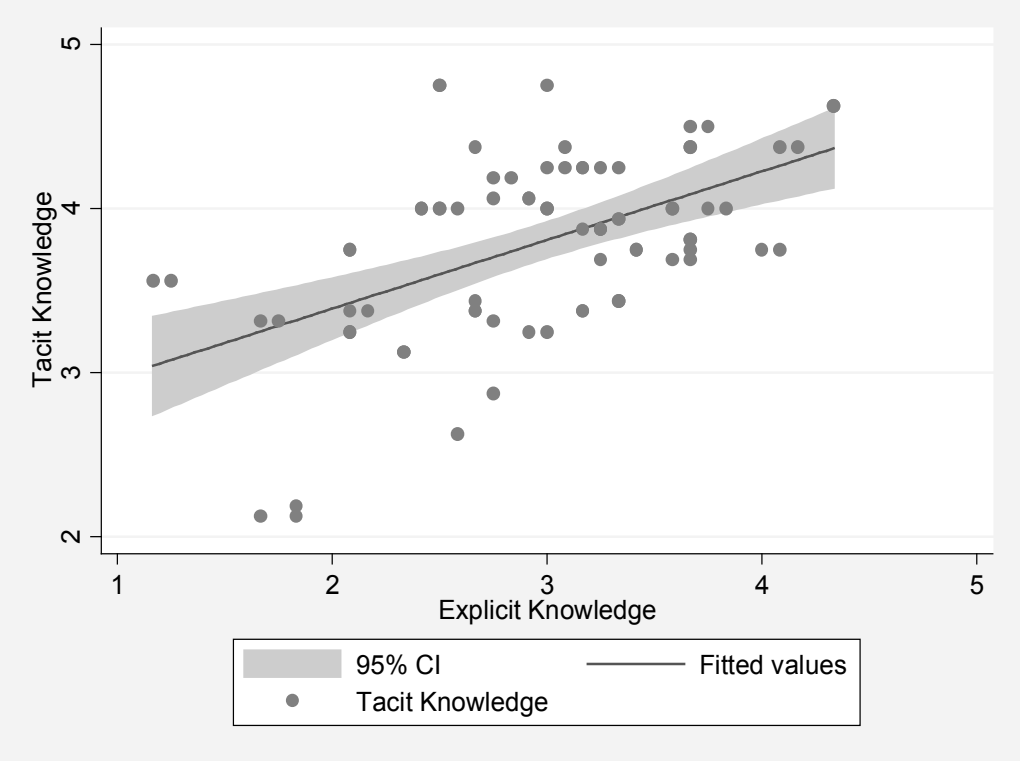

Figure 3 -Relationship between tacit and explicit knowledge sharing behaviour

5.2 Correlation and regression analysis: Demographics

Pearson's correlation coefficient and Spearman's rho were utilised as appropriate to data type. In respect to tacit knowledge sharing, significant positive correlations were identified with the presence of a knowledge management team whilst significant negative associations related to high organisational tenure and possession of a PRINCE2 certification.

With respect to explicit knowledge, extended organisational tenure is also identified to correlate negatively with sharing practices.

Backward stepwise regression was then employed as this is appropriate in situations where there are many predictors or where the researcher is unsure as to which may be significant. Predictors having a probability level above .15 were removed with the final results presented in Tables 5 and 6. Probability levels lower than .05 (95%+ confidence), lower than .01 (99%+), and lower than .001 (99.9%+) are highlighted alongside the adjusted R^2 value as this can reduce the marginal, positive bias associated with the R^2 value when used with smaller sample sizes, small population effect sizes and a large number of predictor variables (Ruppert 2012).

Based on the predictors included, **70.58%** of the variance in tacit sharing is explained. Function, Knowledge Management Team Presence and Knowledge Type (Procedural, Product) are positively significant, with number of Certifications Held and Organisation Tenure negatively significant.

Table 5: Regression analysis on tacit knowledge: demographics

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Scale	B	Std. Error	t
Education Level	-.088	.095	-.92
Function	.889***	.191	4.65
Certifications Held	-.131*	.049	-2.70
Sectoral Tenure	.063	.062	1.01
Organisation Tenure	-.494***	.068	-7.23
KM Team Presence	1.122***	.225	4.99
Knowledge Auditing	-.212	.165	-1.29
K Type: Operational	.263	.212	1.24
K Type: Procedural	.621**	.198	3.13
K Type: Process	.207	.214	.97
K Type: Product	.430*	.177	2.43
Constant	4.048***	.301	13.45

Notes: *p<.05, **p<.01, ***p<.001; N = 47; F(12, 34) = 10.20, p<.0001; **R^2 = .7826, Adj R^2 = .7058.**

Attention is drawn to the negative relationship between certifications held and tacit knowledge sharing. Reflecting on the earlier demographic data and supporting primary research (Eaves 2013), it is found that Prince2 and ITILv3 are cited as most held and most valued. These certifications are layered in depth of knowledge achieved, portable, industry recognised, perishable in duration, significant for career progression and increasingly self-funded. This may impact perceptions of ownership with middle managers considering the knowledge as individually owned, valuable and necessitating protection rather than dissemination. These results also contribute to the extant contradictory empirical evidence identified in respect to the impact of increased organisational tenure, with the negative association found supporting the work of Ojha (2005). This could be interpreted from the perspective of actor fear of being replaced within their organisation (Eaves 2013).

Table 6: Regression analysis on explicit knowledge: demographics

Scale	B	Std. Error	t
Gender (Female)	-.487*	189	-2.57
Function	.232	.206	1.13
Role Experience	.073	.100	.73
Sectoral Tenure	-.054	.082	-.66
Organisation Tenure	-.230**	.082	-2.81
Knowledge Auditing	.326**	.120	2.72
K Type: Operational	-.788**	.233	-3.38
K Type: Procedural	-.016	.267	-.06
K Type: Process	-.483	.256	-1.89
K Type: Product	-.318	.226	-1.41
Constant	3.843***	.364	10.55

Notes: *p<.05, **p<.01, ***p<.001; N = 61; F(11, 49) = 4.58, p<.001; **R^2 = .5067, Adj R^2 = .3960.**

The model collectively explains **39.60%** of the variation in explicit knowledge with only Knowledge Auditing found positively significant. Gender (Female), Knowledge Type (Operational) and congruent with tacit findings, extended Organisation Tenure afford a negative, significant association.

Focus is directed at the negative predictive relationship between operational knowledge (daily norms) and explicit sharing behaviour. This sector is subject to dynamic data flows and high rates of technological obsolescence, with the demands placed on the middle line leading to its description as a *"corporate species under pressure"* (Davenport and Harding 2010, viii). An interpretation of this finding may be that operational knowledge is not being documented as it is both increasingly perishable and cannot be actioned within appropriate timeframes. In this scenario, there is a focus on task completion with less attention to sharing relevance or prioritisation.

The negative predictive influence of female gender on explicit knowledge sharing is also noted, with extant empirical research regarding gender and sharing behaviour conflicting, ambiguous and broadly underexplored. Females are a significant minority group in the Communications sector and it is possible that perceptions regarding status homophily may be impactful and if this is highly perceived, it is likely to negatively impact sharing (Ojha 2005).

5.3 Correlation and regression analysis: Scales

Pearson correlations revealed a large number of scales demonstrated a strong positive or negative relationship with tacit and/or explicit knowledge sharing behaviour. A negative correlation identified between the Time (Opportunities

to Share) and Power (Motivation to Share) scales and both types of knowledge sharing was particularly significant. Based on question design, the inference that time availability is negatively associated with sharing necessitates additional insight. Table 7 presents the results of backward stepwise regression analysis. This indicates that **77.02%** of the variation in tacit knowledge is explained on the basis of the predictors included. A positive and significant association was found between tacit knowledge sharing behaviour and the following scales: Eagerness to Share, Sharer-Receiver Relationship, Perceived Behavioural Control, Social Network, Task Eqivocality, Task Uniqueness, Distributive Justice and Commitment. A negative significant relationship was found with regard to the scales for: Ideocentric Personality, Allocentric Personality, Time, Power and Intention to Share.

Table 7: Scales regression analysis on tacit knowledge

Scale	B	Std. Error	t	r^2		
Ideocentric Personality		-.160	.057		-2.83**	.022
Allocentric Personality		-.419	.130		-3.23**	.247
Eagerness to Share	.136	.066		2.05*	.268	
Sharer-Receiver Relationship	.190	.059		3.20**	.475	
Time		-.161	.051		-3.18**	.296
Structure and Hierarchy		-.091	.054		-1.67	.170
Power		-.128	.053		-2.40*	.108
Intention to Share	-.271	.074		-3.65**	.258	
Emotion	.077	.052		1.48	.320	
Perceived Behavioral Control	.121	.057		2.13*	.452	
Social Network		.145	.056		2.59*	.257
Task Eqivocality	.184	.062		2.97**	.372	
Task Uniqueness	.093	.041		2.25*	.062	
Distributive Justice	.101	.050		2.02*	.154	
Ownership: Department		.071	.036		1.99	.027
Ownership: Organisation	-.082	.049		-1.65	.052	
Ownership: Individual		-.075	.048		-1.54	.001
Commitment		.128	.054		2.35*	.233
Constant	6.613	.560		11.81***		

Notes: *p<.05, **p<.01, ***p<.001; N = 72; F(18, 53) = 14.22, p<.001; R^2 = .8285, Adj R^2 = .7702.

The negative finding for allocentric personality is unexpected as this trait is associated with strong group ties and a consultative approach towards others. Matzler et al. (2008) have previously identified that agreeableness and conscientiousness, as part of allocentrism, have a positive relationship with knowledge sharing behaviour. Similarly, the indication that time availability is a negative predictor of tacit sharing warrants exploration as this implies that individuals are using this space for alternative behaviours. The ba created in this context has negative consequences for knowledge creation and sharing, contrasting with Thomas, Fugate and Koukova's (2011) study.

Regarding intention to share tacit knowledge, the research finds that individuals do not always act in a manner consistent with the intentions they espouse. This aligns with the findings of Kuo and Young (2008), although these authors make no distinction regarding knowledge type in their work. The intention-action gap here however, is more than inconsistency, but a reversal between espoused intent and actual behaviour. Finally, a perception of the power of knowledge is also a negative predictor, aligning with Ipe's (2003) assertion that power is a key determinant of motivation to share.

With respect to explicit knowledge, at correlation, where a significant relationship is identified, this is primarily positive and impacts tacit and explicit knowledge simultaneously. This is congruent with the dynamically-linked emphasis opined by Polanyi (1966) and the mutual facilitation discussed by Cook and Brown (1999) and indicated in Figure 3.

At regression, more negative relationships are identified and there is greater differentiation on the significance and direction of relationships based on knowledge type. This justifies the decision to split the knowledge sharing dependent variable by the tacit and explicit distinction.

Table 8 summarises explicit knowledge findings, indicating **65.23%** of the variation is explained.

Significant and positive associations with explicit knowledge were found for the following scales: Eagerness to Share, Knowledge Ownership (Department), Sharer-Receiver Relationship, Structure and Hierarchy, Task Uniqueness, Pay

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Satisfaction and Culture. Additionally, significant negative associations were identified with regard to: Knowledge Ownership (Individual), Sense of Self-Worth, KM Strategy (Organisation), KM Strategy (Individual), Social Network, Procedural Justice and Image.

Table 8: Scales regression analysis on explicit knowledge

Scale	B	Std. Error	t	r^2		
Knowledge Tools Used		-.086	.059		-1.47	.004
Eagerness to Share	.262	.114		2.30*	.049	
Ownership: Individual		-.171	.068		-2.53*	.006
Ownership: Department		.148	.057		2.61*	.007
Sharer-Receiver Relationship	.271	.083		3.27**	.222	
Structure and Hierarchy		.650	.098		6.60***	.218
Task Uniqueness	.255	.073		3.51**		
Willingness to Share		.183	.100		1.82	.065
Sense of Self-Worth		-.608	.130		-4.67***	.108
KM Strategy: Organisation	-.298	.094		-3.16**	.016	
KM Strategy: Individual		-.307	.108		-2.86**	.016
Social Network		-.197	.087		-2.28*	.042
Pay Satisfaction		.410	.070		5.85***	.162
Procedural Justice	-.216	.077		-2.82**	.007	
Image		-.218	.090		-2.42*	.032
Culture		.289	.118		2.45*	.178
Constant	5.058	.510		9.92***		

Notes: *p<.05, **p<.01, ***p<.001; N = 72; F(16, 55) = 9.32, p<.001; R^2 = .7306, Adj R^2 = .6523.

Attention is directed at a number of findings which warrant explication. Firstly, perceptions of knowledge ownership emerge as complex with organisational ownership found not to be significant in predicting explicit sharing behaviour, whilst departmental ownership is a positive predictor and individual ownership has a negative predictive relationship. There is a lack of research in this area and these results are indicative that a perception of group rights to knowledge affords more influence than the labour ownership rights of the organisation, possibly driven by social network ties (Gratton 2007). The negative finding in respect to a perception of individual knowledge ownership and explicit sharing may be considered through the psychological connection established between an organisational actor and the knowledge they create (Wang et al. 2006) alongside underlying interpretations of the work environment and perceptions of fairness.

Additionally, as self-worth increases, explicit knowledge sharing decreases, contrasting with the work of Teh and Yong (2011). This study indicates that some individuals who recognise the worth of their explicit knowledge may be deliberately electing to withhold or hoard it from their colleagues and employer to protect personal value (Vaiman and Vance 2010). It is illuminating that this result impacts explicit rather than tacit knowledge, implying that significant value is attributed to this knowledge type. Further, high scores in respect to the formal procedures in place actually aligned negatively with explicit sharing. This implies that although decision making processes are perceived as fair, there is an underlying disconnect with respect to the nature or orientation of the outcomes which result from them.

When respondents scored highly for strategy based questions, this had a corresponding negative association with explicit sharing behaviour. Within the strategy construct there is a distinction between organisation ownership of strategy and individual ownership and this finding affected both aspects. Reviewing the construct specifics, the individual ownership alluded to is still based on the originating strategy of the organisation, such as taking responsibility for cascading senior level objectives to team members. This is adjunct to personal knowledge management and may be interpreted as revelatory of underlying issues with the effectiveness of organisational strategy towards knowledge management.

Finally, a consideration of the type of ties which constitute a network aids examination of the negative finding in relation to Social Network membership and explicit knowledge sharing, as this impacts motivation to assist, emotional intensity, mutual confiding, time spent in interaction and the degree of reciprocal services undertaken (Gratton 2007). Ties are fluid and can vary within the same organisation, with their strength responsive to events such as transformational change or developing cabal relationships. Knowledge workers afford an adaptive, pragmatic capacity to *"bypass existing authorities and use their networks to stay informed and get things done"* (Efimova 2009),

addressing informal structural holes as appropriate and employing tacit conduits as inferred from the positive significant relationship identified for social network membership for this knowledge type. Further, knowledge shared within a social network may not be diffused across the wider organisation.

An updated Multidimensional Model of Individual Knowledge Sharing Influences is now presented in Figure 4, reflecting underlying constructs and the nature of their predictive relationship.

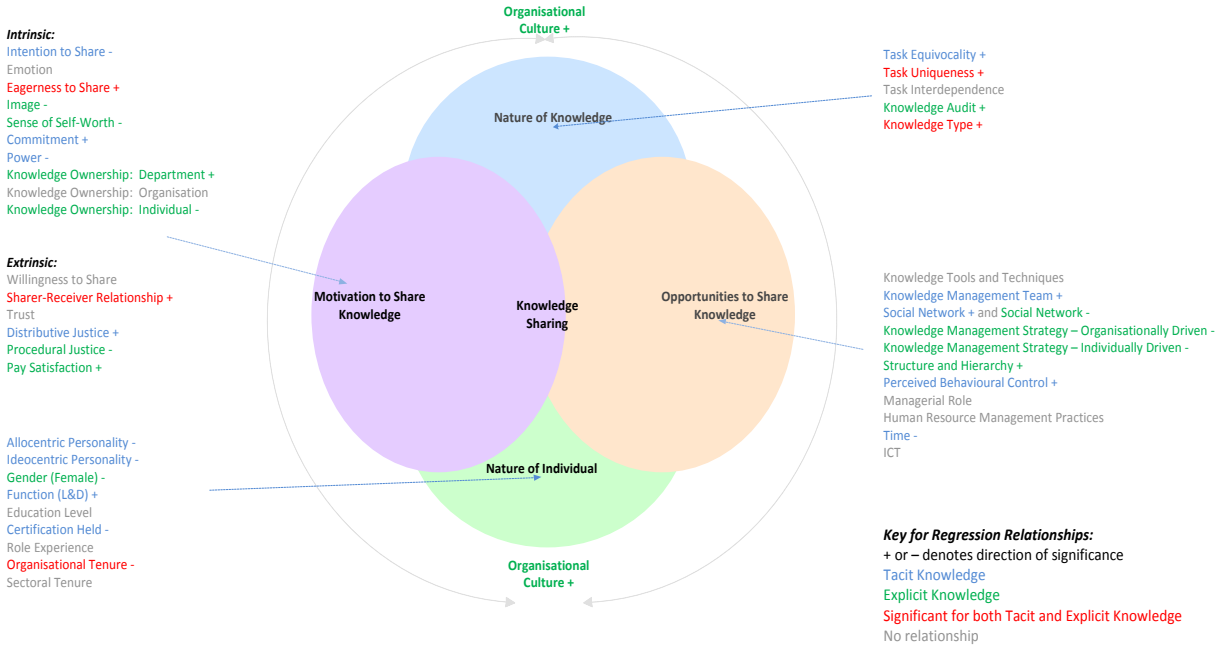

Figure 4: Multidimensional model of individual knowledge sharing influences: predictors of tacit and explicit sharing behaviourssessing the impact of organisational velocity

With origins in physics, centrifugal or centripetal forces can also be applied to conceptual behaviours to represent an effect (LaLiberte 2009). Organisational Velocity as a centrifugal force moderates the significance of a construct with the outcome of decreasing sharing behaviour, moving away from the knowledge sharing core inter-sectional point as illustrated in Figure 1. By contrast, Organisational Velocity as a centripetal force moderates the significance of a construct increasing knowledge sharing behaviour, pulling towards the centre of the model. To determine impact, data for Firm A with its established high Organisational Velocity context was removed, analyses repeated and compared.

From a correlation perspective, Motivation to Share has a significant relationship with Organisational Velocity in terms of the Power construct which affects tacit and explicit knowledge sharing as a centrifugal force. A significant relationship is also observed within Opportunities to Share, impacting the Time construct for both knowledge types centrifugally. The same factor is influenced with the Social Network construct for tacit knowledge sharing only and as a centripetal force. Regression relationships are now fully presented.

Table 9: Organisational velocity regression analysis

Model Factor	**Organisational Velocity Findings: Tacit Knowledge**	**Force**
Nature of Knowledge	No Significant Relationship	N/A
Motivation to Share	Significant Relationship: Intention to Share and Power	Centrifugal
Opportunities to Share	Significant Relationship: Time Significant Relationship: Social Network	Centrifugal Centripetal
Nature of the Individual	Significant Relationship: Allocentric Personality Ideocentric Personality	Centrifugal

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Culture	No Significant Relationship	N/A
Model Factor	**Organisational Velocity Findings: Explicit Knowledge**	**Force**
Nature of Knowledge	No Significant Relationship	N/A
Motivation to Share	Significant Relationship: Image Sense of Self-Worth Knowledge Ownership: Individual Procedural Justice Significant Relationship: Knowledge Ownership: Department	Centrifugal Centripetal
Opportunities to Share	Significant Relationship: Social Network KM Strategy: Organisation KM Strategy: Individual	Centrifugal
Nature of the Individual	No Significant Relationship	N/A
Culture	No Significant Relationship	N/A

At regression, the Nature of Knowledge and Culture reveal no significant relationship. Constructs within Motivation to Share and Opportunities to Share are primarily impacted centrifugally, alongside the centripetal affect of Knowledge Ownership: Department (Motivation to Share) on explicit knowledge and Social Network influence on tacit knowledge (Opportunities to Share). The Nature of the Individual is only impacted centrifugally. High Organisational Velocity affords a greater range of impact by factor for tacit knowledge sharing but a greater number of constructs are moderated for explicit sharing. The centrifugal affect is notably strong for Allocentric Personality, Time and Intention to Share. Synthesising findings, the conceptual framework is revisited in Figure 5.

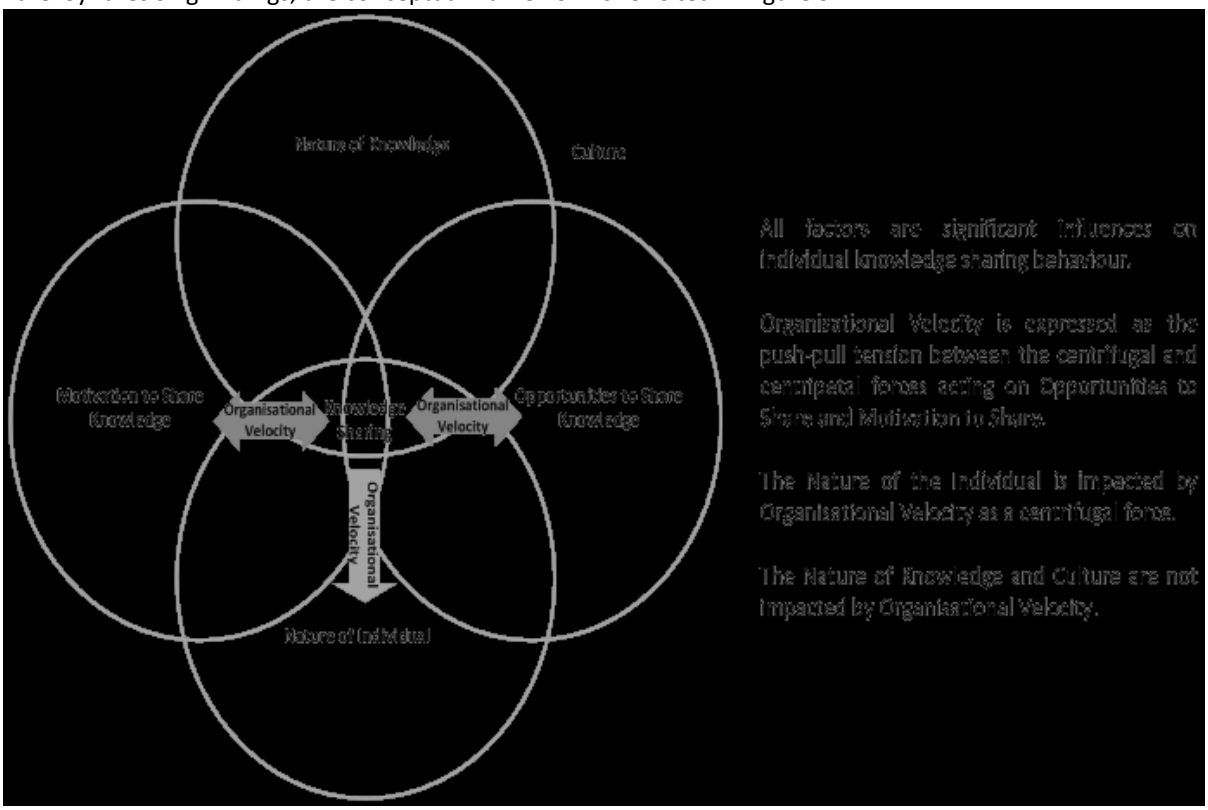

Figure 5: Revised multidimensional model of individual knowledge sharing influences

These findings surface issues of knowledge ownership and personal versus organisational knowledge management strategies. It is inferred that in uncertain and dynamic circumstances, dimensions which would be expected to benefit

knowledge sharing practice are militated or indeed, reversed. Actor focus can orientate towards knowledge protection rather than its transfer with the power and bargaining value of knowledge (Osterloh 2006) perceived to be increased. Aligning with the "accelerated growth" of personal knowledge management (Cheong 2011, iii) and increasing middle line influence (Marichal and Segers 2012), opportunities such as time availability or the benefits of social network membership may be utilised for individual rather than organisational gain.

6. Conclusions and benefits of study

The Multidimensional Model of Individual Knowledge Sharing Influences advances Ipe's (2003) framework by affording breadth and cross-disciplinary coverage. A plethora of constructs related to Motivation to Share, the Nature of Knowledge, Opportunity to Share, Culture and Nature of the Individual are significantly associated with sharing behaviour across all operators. The model progresses from conceptual explication to exploratory empirical assessment with the variance explained by the regression models notably strong, particularly for tacit knowledge. Differences in practice are identified based on knowledge type, supporting the tacit and explicit distinction utilised. The Nature of the Individual factor demonstrates value with novel insight into the heterogeneous human response to stimuli, notably the dynamics of allocentric and ideocentric personality traits. Further, via the equally underexplored lens of demography; gender, function, certifications held and organisational tenure emerge as particularly significant.

Consideration of contextual impact is afforded through development and exploratory validation of the original conceptualisation of Organisational Velocity. Differences in sharing norms were observed in the high velocity setting of Firm A as opposed to the other operators, with reduced sharing identified through constructs within the Motivation to Share, Opportunities to Share and the Nature of the Individual factors. This demonstrates its moderating capability, primarily as a centrifugal force.

The research demonstrates that middle management may indeed be described as a pragmatic "center of power and influence" (Davenport and Harding 2010, ix), disposed to act and with a capacity to influence and transform. If the interplay of factors within the Multidimensional Model of Individual Knowledge Sharing Influences is sub-optimum, notably with high Organisational Velocity present, then middle line attention can become increasingly directed towards personal gain or to aid their specific group memberships. Social capital accumulated through networks and boundary spanning position alongside knowledge in possession may be directed to generate rent in alignment with the individual interest rather than being aggregated for the wider organisation's benefit (Seeley 2010). Similarly, utilisation of time availability can become orientated towards personal knowledge management, resulting in the risk of increasing hiding, hoarding and disengagement protection mechanisms rather than active sharing behaviours.

The study findings affirm its justification: knowledge sharing is too complex a process to be explained by one or a few factors in isolation or by a specific, narrow focus on tacit or explicit knowledge. Further, *continual episodic change*, central to the definition of Organisational Velocity, is interpreted to exert a notable impact at the individual level with expansive consequences for intra-organisational knowledge sharing. This increased understanding of the driving and restricting influences affecting individual sharing behaviour can support provision of enabling conditions. As applicable, it may also facilitate reflection on means to re-orientate middle management attention availability towards fulfilling the organisational agenda or collective good rather than a pursuit of personal knowledge management. The design and facilitation of knowledge management and tailored strategic change management interventions can thereby be enhanced.

7. Limitations and future direction

This study captures the individual influences impacting knowledge sharing at a particular point of time. Repeating the research process at staged intervals would provide an opportunity to develop longitudinal enquiry, fully examining the orientation and strength of causal relationships and changes in Organisational Velocity over time. Research could then be developed to operationalise the direction and magnitude of Organisational Velocity changes as vectors. Further, it would be utile to explore the impact of this dimension in contexts of varying levels of knowledge intensity and to examine Functional and Role Velocity as potential sub-components. Case study and ethnography could be employed to support this process. In addition, it would be illuminating to identify any significant moderating and/or mediating relationships between the constructs identified and to undertake a comparative analysis of this study and survey instrument across different organisational forms and sectors. The exploratory findings from this work therefore provide a catalyst for the direction of future research and the management of intense organisational conditions in praxis.

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