ISSN - 2250-1991

Volume : 4 | Issue : 6 | June 2015

Research Paper Commerce

Comparision between Social, Asynchronous and Synchronous Communication and Collaboration Patterns between Senior Leaders within IT Industry and New Hires in IT Industry

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KEYWORDS

1. INTRODUCTION

Organizational structures have existed and developed from the ancient times of hunters and gathers to royal power structures to industrial and in today's post-industrial structures. The study of organization structure has been evolving with numerous studies, viewpoints and research being conducted to find the intricate balance between its constituents.

Early theorists of organizational structure, Taylor (1911), Wren, Bedeian and Breeze (2002), and Weber (1922) "understood the importance of structure for effectiveness and efficiency and without any question, supposed that whatever structure was needed, people could fashion accordingly. Organizational structure was considered a matter of choice. However, with the introduction of human relations theory in 1930, there was still not a denial of the idea of structure as an artifact, but rather promotion of the creation of a different sort of structures, one in which the needs, knowledge, and opinions of employees might be given greater recognition." 1960s brought in a very diverse view, suggesting that the organizational structure is "an externally caused phenomenon, an outcome rather than an artifact." Modern world organizational theorists such as Lim, Griffiths, and Sambrook (2010) have proposed that organizational structure development is very much dependent on the expression of the strategies and behavior of the management and the workers as constrained by the power distribution between them, and influenced by their environment and the outcome.

Hinds and Kiesler (1995) hypothesized that due to the collaborative nature of work and the way employees are organized in work groups, technical employees, as compared with administrative employees, prefer cross boundary communications. Powell (1990), Barley (1994) and others argued that the rise of technical work and the horizontal organization of technical workers increases collaboration and nonhierarchical communication.

Let us now examine the social aspect. Butler's(2001) resource-based theory of sustainable social structures suggested that members contribute time, energy, and other resources, enabling a social structure to provide benefits for individuals. These benefits, could include information, influence, and social support, are the basis for a social structure's ability to attract and retain members. Butler found that communication activity and size have both positive and negative effects on a structure's sustainability.When we apply the same to Sundararajan's (2009) research, we see emergence of Respect (whether real or perceived and not very different from esteem) as a social factor, which is important to people to validate themselves and the skills they bring to the table in collaborative work situations. He suggested that respect and its companion, influence in a group, and are an important dimensions in collaboration among members in group. Paul (2007) in his paper on how Google designs successful user experiences for its communication products emphasized on the important to understand users' communication behaviors beyond what they

do with the product itself. In his research paper he described a technique for building an understanding of people's social networks and communication tools by only spending 60 minutes each with a small number of research participants and described examples of the type of insights the technique can yield.

In general, it has become increasingly clear that organizations continue to search for more optimized models as we enter a nera of technology which helps enables organic social change. The current OD models work best for the industrial and post-industrial era organizations they were designed around.

The rest of the paper is structured as follows: next we discuss framework, survey question, and aggregation of the Relative Autonomy Index. Post which we discuss the internal validity test for the elements of the RAI. The internal validity test employ factor analysis.

2. FRAMEWORK

Relative Autonomy Index (RAI) is a measure of motivational autonomy developed by psychologists Ryan, Deci, Chirkov and others (Chirkov, Ryan, & Deci, 2011; Ryan and Deci 2000, 2012). RAI is a direct measure of the individual's ability to act on what they value. This measure is computed with reference to specific domains or activities.According to the SDT formulation, a person is autonomous when their behavior is experienced as willingly enacted and when they fully endorses the actions in which they are engaged and/or the values expressed. People are most autonomous when they act in accord with their authentic interests or integrated values and desires (Deci & Ryan, 1985; Ryan & Deci, 2000; Ryan, Deci, & Grolnick, 1995). SDT contrasts autonomous behavior with controlled behavior, 'in which one's actions are experienced as controlled by forces that are phenomenally alien to the self, or that compels one to behave in specific ways regardless of one's values or interests' (Chirkov et al., 2003). The RAI measures the extent to which the person's motivation for their behavior in a specific domain is fairly autonomous as opposed to somewhat controlled.

Human behavior is motivation driven both intrinsic and extrinsic. Intrinsic motivation is associated with the enjoyment of the activity in itself. Extrinsic motivation is the performance of a behavior in an instrumental way (one's action is effectively coerced) which can be categorized into four different types determined by the degree of self-endorsed behavior: external, introjected, identified and integrated. We however need to note that distinction between all types of motivations is not relevant in every context (Ryan & Connell, 1989; Levesque et al., 2007), which is why the analysis has combination subscales: external, introjected, identified and integrated motivation.

3. SURVEY

The survey questions were designed to ask individuals to rate each of four possible motivations for their actions in a specif-

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ic domain. RAI then combines these subscales into one single measure which is the weighted sum of the person's scores in the subscales. The subscales weights are a function of their position in the self-determinationcontinuum: -2 for extrinsicmotivation, -1 for introjected motivation, 1 for identified motivation and +2 for intrinsic motivation. Which makes the RAI range between -5 and 5. Positive scores are interpreted as individual's motivation being relatively autonomous; and negative scores indicate a controlled motivation.

4. DATA

Data wascollectedthru surveyconducted for Senior Leaders within IT Industry and New Hires in IT Industry from Dec 2013 thru April 2014. The total sample size is 62 individuals. The questionnaires include several modules that provide an integrated data platform to answer a variety of research questions.

In order to measure effectiveness of RAI to measures autonomy of individuals, we first examine whether the data collected is consistent with the hypotheses of our measurement model and second we will perform standard tests to assess the internal consistency of the scale itself.

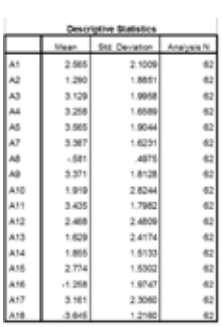
We test two main hypotheses to assess adherence of data to measurement model.

(1) Our data has four dimensions (extrinsic, introjected, identified and intrinsic motivations).

(2) Motivation subscales have an ordered correlation among them.

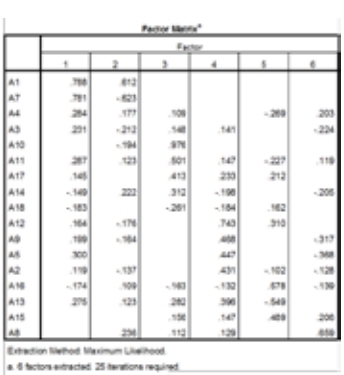
If we examine the structure of our questions, we are investigating the feasibility of a four dimension structure, however, the main limitation of this approach is that it disregards the domain-specific nature of our autonomy measure. i.e. it assumes that questions about the same type of motivation but referring to differentareas of decision-making load on a common factor.Following Guio, Gordon and Marlier (2012), we analyze the structure of the data using three different statistical methods: factor, multiple correspondence and cluster analysis.

We start by performing an exploratory factor analysis (EFA) to test if a six factor solution that discriminates the items of the four motivation subscales emerges. To facilitate the interpretation of the factor loadings we rotate the axes. We use oblique rotation, given that the motivation subscales are likely to be correlated.



Descriptive Statistics

	Mean	Std. Deviation	Analysis N
A1	2.565	2.1009	62
A2	1.290	1.8851	62
A3	3.129	1.9958	62
A4	3.258	1.6589	62
A5	3.565	1.9044	62
A7	3.387	1.6231	62
A8	-.581	.4975	62
A9	3.371	1.8128	62
A10	1.919	2.8244	62
A11	3.435	1.7982	62
A12	2.468	2.4809	62
A13	1.629	2.4174	62
A14	1.855	1.5133	62
A15	2.774	1.5302	62
A16	-1.258	1.9747	62
A17	3.161	2.3060	62
A18	-3.645	1.2160	62

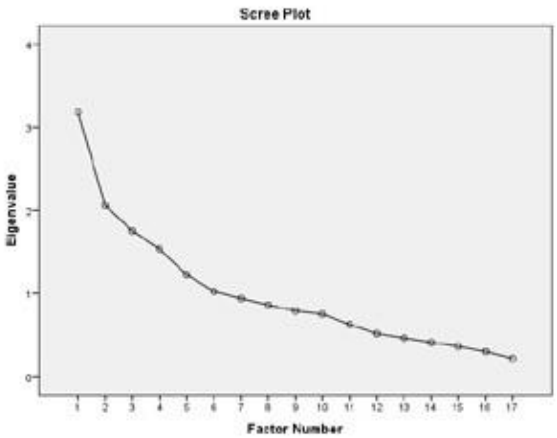


Factor Matrix[a]

	Factor					
	1	2	3	4	5	6
A1	.788	.612				
A7	.781	-.623				
A4	.284	.177	.108		-.269	.203
A3	.231	-.212	.148	.141		-.224
A10		-.194	.976			
A11	.287	.123	.501	.147	-.227	.119
A17	.145		.413	.233	.212	
A14	-.149	.222	.312	-.196		-.205
A16	-.183		-.261	-.184	.162	
A12	.164	-.176		.743	.310	
A9	.199	-.164		.468		-.317
A5	.300			.447		-.368
A2	.119	-.137		.431	-.102	-.128
A18	-.174	.109	-.183	-.132	.678	-.139
A13	.275	.123	.282	.396	-.549	
A15			.106	.147	.469	.206
A8		.236	.112	.129		.658

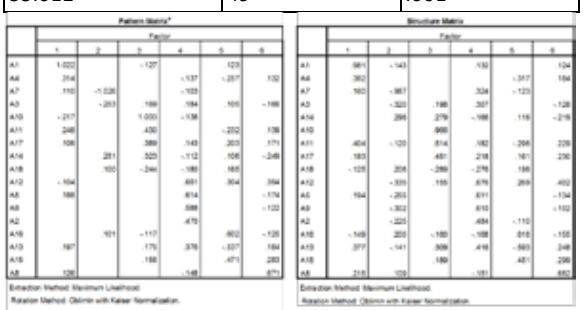
Extraction Method: Maximum Likelihood.

a. 6 factors extracted. 25 iterations required.



Goodness-of-fit Test

Chi-Square	df	Sig.
33.012	49	.001



Pattern Matrix[a]

	Factor					
	1	2	3	4	5	6
A1	1.022		-.127		.123	
A4	.254			-.137	-.257	.132
A7	.110	-1.026		-.103		
A3		-.253	.169	.184	.105	-.166
A10	-.217		1.000	-.138		
A11	.248		.430		-.202	.138
A17	.106		.389	.143	.203	.171
A14		.281	.325	-.112	.106	-.249
A16		.100	-.244	-.180	.165	
A12	-.104			.651	.304	.394
A5	.188			.614		-.174
A9				.588		-.122
A2				.476		
A18		.101	-.117		.802	-.126
A13	.197		.170	.376	-.537	.184
A15			.188		.471	.283
A8	.126			.148		.671

Extraction Method: Maximum Likelihood.
Rotation Method: Oblimin with Kaiser Normalization.
a. Rotation converged in 14 iterations.

Structure Matrix

	Factor					
	1	2	3	4	5	6
A1	.661	-.143		.152		.124
A4	.362				-.317	.184
A7	.160	-.987		.324	-.123	
A3		-.323	.198	.307		-.128
A10		.284	.279	-.186	.116	-.219
A11			.668			
A17	.404	-.125	.514	.182	-.294	.229
A14	.183		.481	.218	.161	.200
A16	-.125	.258	-.289	-.278	.196	
A12		-.333	.155	.676	.269	.402
A5	.164	-.253		.611		-.134
A9		-.302		.610		-.102
A2		-.225		.484	-.110	
A18	-.149	.203	-.180	-.188	.818	-.152
A13	.377	-.141	.309	.416	-.660	.248
A15			.189		.481	.299
A8	.218	.108		-.181		.682

Extraction Method: Maximum Likelihood.
Rotation Method: Oblimin with Kaiser Normalization.

Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of SquaredLoadings			Rotation Sums of Squared Loadings[a]
	Total	%of Variance	Cumulative %	Total	%of Variance	Cumulative %	Total
1	3.183	18.724	18.724	1.809	10.641	10.641	1.605
2	2.058	12.108	30.831	1.113	6.550	17.191	1.649
	1.751	10.301	41.132	1.724	10.140		
3						27.331	1.831
4	1.535	9.032	50.164	1.544	9.083	36.415	2.069
	1.224	7.197	57.361	1.207	7.099		
5						43.513	1.332
6	1.022	6.015	63.375	.922	5.421	48.935	1.057
7	.937	5.514	68.889				
	.858	5.047	73.937				
8							
9	.792	4.657	78.594				
	.751	4.417	83.011				
10							
11	.625	3.678	86.689				
12	.515	3.032	89.721				
	.461	2.714	92.435				
13							
14	.409	2.405	94.840				
	.361	2.123	96.963				
15							
16	.300	1.765	98.728				
17	.216	1.272	100.000				

Extraction Method: Maximum Likelihood.

a. When factors are correlated, sums of squaredloadings cannot be addedto obtain a total variance.

Factor Correlation Matrix

Factor	1	2	3	4	5	6
1	1.000	-.064	.205	.067	-.185	.143
2	-.064	1.000	-.059	-.411	.098	-.055
3	.205	-.059	1.000	.178	-.025	.109
4	.067	-.411	.178	1.000	-.059	.033
5	-.185	.098	-.025	-.059	1.000	-.018
6	.143	-.055	.109	.033	-.018	1.000

Extraction Method: Maximum Likelihood.
Rotation Method: Oblimin with Kaiser Normalization.

Firstly, we consider the full set of items. The sample under analysis is very small. According to Kaiser criterion, there are six factors in the data as they have Eigenvalues > 1. The first four factors account for 50 percent of the variance, while the last two account for 7 and 6 percent. The Extraction Sums of Squared Loadings provides similar information based only on the extracted factors. The means for each of the items appear to be reasonable as each of the items is measured on RAI scale. No values are above +5 or below -5. The standard deviations are all similar suggesting that there are no outliers for any of the items. Factors capturing extrinsic and introjected subscales are strongly correlated, and they are both weakly correlated with the factor capturing intrinsic subscale. However, unlike the case of new hires, we find that contrary to theory, the factors capturing extrinsic and intrinsic motivations are again strongly correlated.

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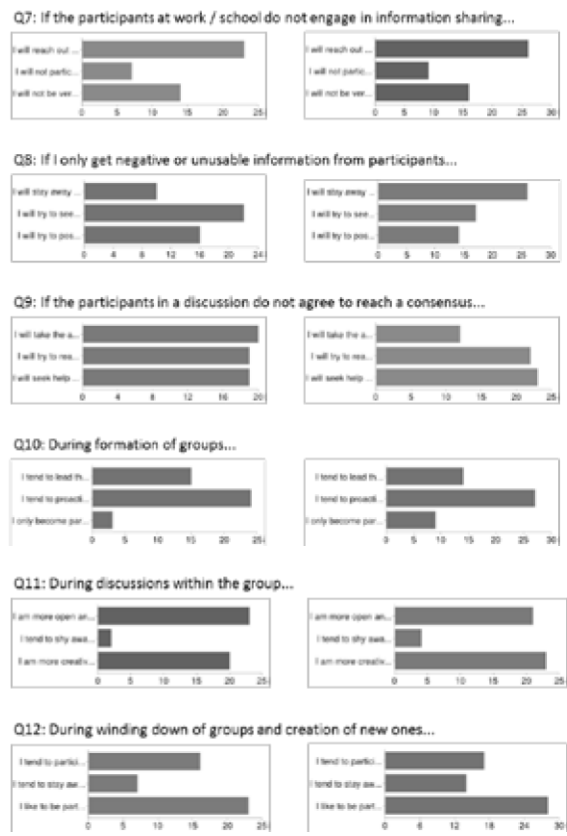
The Scree is plot shows that there are six relatively high (factors 1, 2, 3, 4, 5 and 6) eigenvalues. Retain factors that are above the 'bend' – the point at which the curve of decreasing eigenvalues change from a steep line to a flat gradual slope.

The Factor Matrix represents information from initial un-rotated solution. The values are weights that relate the item (or variable) to the respective factor.

The Goodness-of-fit Test determines if the sample data (correlations) are likely to arisen from six correlated factors. In this situation we want the probability value of the Chi-Square statistic to be greater than the chosen alpha (0.05). Based on our results the six factor model is a good description of the data.

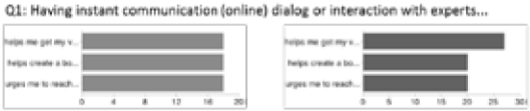
The Pattern Matrix shows the factor loadings for the rotated solution. Factor loadings are similar to regression weights (or slopes) and indicate the strength of the association between the variables and the factors. The solution has been rotated to achieve an interpretable structure. The Structure Matrix shows the correlations between the factors and the items for the rotated solution. Since the factors are correlated the Pattern Matrix and the Structure Matrix are not the same.

The Factor Correlation Matrix shows that factors 1, 2, 3, 4, 5 and 6 are statistically correlated.



5. RESULTS

Q1: Having instant communication (online) dialog or interaction with experts...



Q2: If the tool can rank the participants based on free/busy information...

Q3: If various collaboration tools can share information between them then...

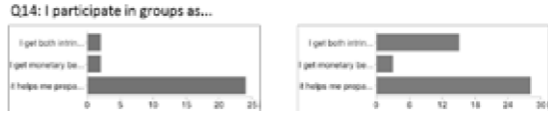
Q4: If there was a classification or tag available to identify experts in communication tool...

Q5: If the tool can list the most active group communications...

Q6: If the tool can help establish location of experts...

Q13: My communication and collaboration is primarily driven by...

Q14: I participate in groups as...



Q15: Communication and Collaboration is essential...

Q16: My communication and collaboration with my direct group...

Q17: During my communication and collaboration...

Q18: When I try to create a new group...

Starting with the comparison between education levels of new hires and senior leaders, we find that 96% of new hires are graduates as compared to 54% of graduates for senior leaders. We also observe that 41% of senior leaders are post graduates with 5% being doctorate or above. Next we compare the overall experience of using Electronic Tools for Social Communication and Collaboration to achieve goals and objectives and find that there is relatively same consensus between the two groups.

The next 7 questions (Q1 thru Q7) the responses from the two groups is relatively synonymous, leading to observation that these two diverse groups relate to similar RAI.

The main differences start to emerge in question 8, where we observe that senior leaders are more mindful to extrinsic, introjected feedback and in question 14 where the response outlines the need for senior management for intrinsic and extrinsic rewards which is not observed in new hires.

6. CONCLUSION

In this paper we provide a detailed examination of a measure of individuals' autonomy, the Relative Autonomy Index, using data representative of new hires and senior leadership in IT Industry. We report mixed results in terms of the conceptual validity of the RAI. On one hand, when we consider a reasonably sized sample, our statistical methods identify four dimensions in the data, each one corresponding to one of the motivations subscales, as

predicted by our measurement model. This means that in most cases the correlations between our subscales perfectly fit the self-determination continuum.

Our exploratory analysis of the survey results shows that both new hires and senior leaders are similar in their autonomy except of areas where their experience in the industry lead them to distinguish their need for recognition, participation and rewards.

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