# Online Social Network Usage for Increased Organizational Performance: Underpinnings Emphasizing Creativity of Employees and Employee-Autonomy-Handling Capability

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## Abstract

Some of the features that affect organizational performance have been attempted. These features are more relevant in organizations that are oriented towards innovation. In particular, benefits that accrue from the usage of Online Social Networks (OSN) are looked at in an organizational setting. The different orders of creativity and relationship between weak links and creativity in an organizational context have been elucidated. The complex relationship between OSN usage and an individual's capability to handle autonomy is examined in detail. A formal analysis of this relationship has been presented.

**Keywords:** *Organization Structures, Online Social Networks, Creativity, Autonomy.*

## I. Introduction

Current knowledge-intensive organizations have an enormous need for creativity and innovation. Consequently, this leads to a need for greater autonomy, especially while taking decisions and translating creative ideas into tangible results.

The erstwhile command and control approach to run an organization is no longer valid. It may lead to disharmony and more importantly erosion of creativity. Such organizations may have lower performance and miss out on utilizing the creative potential of employees.

With the introduction of new tools such as Online Social Networks (OSNs), businesses are rapidly adopting and using them. Adoption of OSNs necessitates provision of autonomy and independence to employees.

The key contribution of this paper is to understand the

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effect of OSN usage on the autonomy of an employee. We also provide a brief on the relationship between OSNs and creativity. This is especially important in today's context because knowledge-intensive organizations are the order of the day.

## II. Preliminaries

### Current Organization Structures

Organizations of today are "the large, vertically integrated, hierarchical organizations that have persisted throughout the latter half of the twentieth century." [1] Competition has been the major ingredient in its work culture. In order to further self-interest, employees did as they were asked to do, faster and better. Any deviation from the work norm attracted punishment. Such a culture is detrimental and also not sustainable.

"Hierarchical systems arose from models of creating systems with a high degree of certainty and security and delineated boundaries of function, structure, order and logic." [1] Leaders were powerful because they were perceived to have knowledge that had a say in controlling workers' duties. However evolution has taken us to distributed power devoid of command and control, and that seems to be the order of the day.

### B. Ties and Relations in a network

Today's organizations are networks of people who have need-based interactions with varying goals to achieve. Weak and strong ties are a part of any network. It has been observed that weak ties enhance creativity [2]. Networks having the right size and also possessing weak strength seem to encourage creativity when its members are allowed to access range of varying social circles. Weak ties are characterized by "social relationships, which are typified by infrequent interaction, short history, and limited emotional closeness." [3].

It has been observed that a network of individuals, like society organizes itself without the need for direction or control from an external agent. The organization refers to an "increase in the structure or order of the system behavior through a dynamic and adaptive process where systems acquire and maintain themselves, without external control. Structure can be spatial, temporal or functional." [4] Network functioning is more effective if members have an inclination towards autonomy. It is also natural for this inclination to be present because all living beings aspire independence.

### C. Networks as Emergent Structures

Interaction among agents or members of a network is random with the help of whatever other agents pass. Natural selection helps in retaining some of these interactions because of synergy. Such stabilized interactions are called bonds, relationships or links. A link connects two agents. A large number of links is a network. Within the network, agents can now be seen as nodes where different links come together. [5] In a social network people are linked through friendship, trust or collaboration.

### D. Online Social Networks

Current trends reveal social networks becoming online (OSNs). OSNs allow profiles of individuals to have their own websites. These also allow connections with other members who are friends, acquaintances and contacts, thus creating a virtual network comprised of weak and strong ties. "What OSNs do is to try to map out what exists in the real world. In the world, there's trust. As humans fundamentally parse the world through the people and relationships they have around them, so at its core, what a social network does is map out all of those trust relationships. So this map can be called the social graph, and it's a network of an entirely new kind and has real world implications." [6]

OSNs are more like the real-world social togetherness. They overcome geographical and temporal distances. One can be in touch with different people from various walks of life simultaneously. OSNs can be seen to be complex adaptive systems (CAS) as they evolve. [7]

Most importantly, OSNs encourage broad patterns of independence and interaction without any class distinction or force (gleaned from current adoptions such as Facebook, My Space, LinkedIn, and Mixi). This leads to sharing knowledge, and also sharing discussions. Note that OSNs do not impose constraints. In OSNs the social context gains importance as we get influenced by our closest friends, peers and acquaintances. Thus we see that OSNs breed ties of varying strengths.

An OSN is a self-organizing system in which people are independent and individuality gets expressed uninhibitedly by logging into the OSN with a sense of ownership. Thus an OSN is like an organization that has independence and autonomy leading to holistic individuality of its employees. There is reduction in perceived and real enslavement in an OSN. The emergence of communications and virtual relationships has been observed (3, 4, 5 &6).

## III. Definitions, Notations and Analysis

We provide formal definitions and symbolic representations which enable an analysis of key features that effect organizational performance from the standpoint of creativity and autonomy. Online Social Networks (OSNs) are already being utilized inside organizations for collaboration with employees and outside for marketing, customer service and other purposes, although some organizations still restrict their usage. Here we try to formally associate the benefits of OSN usage in terms of resultant autonomy and creativity. Creativity is valued as one of the most important aspects in many organizations. This creativity can be harnessed by organizations for driving innovation within teams and the organization as a whole.

### OSN Usage Level - U

Online Social Network Usage - U can be defined in terms of the following parameters:

$i_p$, p = 1..3, Importance of usage context (discrete-ized values to indicate gross importance levels in the organization)

$t_k = k^{th}$ occurrence of contiguous time period of usage

$\Sigma t_k \leq N$, where N is the upper bound on usage time for a single user in an organization.

### Then OSN Usage Uj for an individual j

$U_j = \Sigma i_{p,j} * t_{k,j}$

j varies from 1 to n, where n is the cardinality of the members of an organization

$U = \Sigma U_j / j$, is the mean usage level of the OSN at an organization level

Optimal usage - $U_{Opt}$

### Autonomy Generated - A

The degree to which one may make independent & significant decisions in a job role. Spending more time on OSNs enables creation of a large number of weak ties. Greater weak ties lead to greater creativity as proven in literature [2].Autonomy helps in getting contents from these weak ties, utilizing the inputs and synthesizing the contents in a member's domain of discourse. As a result of OSN usage to connect with members within an organization, official collaboration and sharing of ideas can also increase.

### *Forms and orders of Creativity*

*Lower order of creativity: Identify novelty or something from another domain or field and being able to determine the applicability in the domain of interest and hence expand the domain.*

*Higher order of creativity: Mapping and explorations in conceptual spaces may lead to the expansion and generation of novel ideas. Sometimes changes in conceptual spaces may lead to radical transformations, and not just expansions, in the constraints that define the next order in the domain or a new domain altogether.*

So as a result, autonomy and the existence of weak ties collectively helps move an organization from a lower to a higher order of creativity.

### Optimal Usage - $U_{opt}$ is the usage level at which the next order of creativity is reached.

Usage of Social Networks creates weak ties as you get to meet new people from other fields of interest and other domains.

Number of weak ties :

1,2, … n

$W_{max}$ - beyond which more weak ties leads to a fall in creativity as intellectual bandwidth of an individual is limited.

It should be noted that $W_{max}$ is a parameter whose value may differ from individual to individual. However the general trend is given in Figure 1.

### Weak ties Leads to higher creativity contingent to what has been stated and represented in Figure 1.
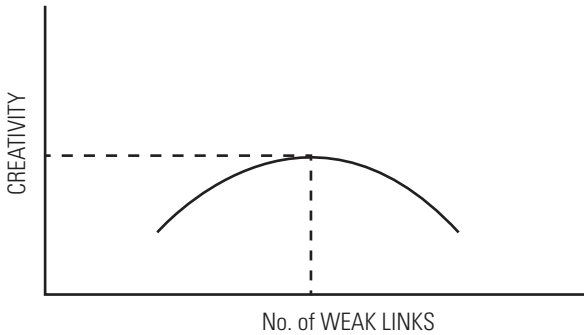
Figure 1. Relationship between creativity and weak links in social networks

Person in a specific role:

- Gets ideas on how activities can be done in a role higher than his current role

- Makes the right connections via OSN usage with people for handling this higher role

- Gains knowledge and skills for this new role by means of social interactions, audio-visual media usage and learning.

**He can reach a potential state where his capability or maturity has gone up and he/she is in a position to handle a greater autonomy-driven decision making role (not yet officially granted).**

Self-organization, and autonomy itself i.e. the process of autonomous decision making actually leads to a self-imposed reduction in generation of further weak ties and reduced OSN usage due to perceived reduction in creativity by the individual. This essentially leads to an increase in potential autonomy for the individual and consequently for the system and a new stable state may be reached.

**Usage of OSN leads to increase in autonomy A in the organization:**

This happens due to absence of constraints in terms of how an individual uses the OSN, including the following scenarios:

- Usage for organizational purposes

- Casual usage

- Interactions with existing contacts – official and personal

- Creating new online contacts – official and personal, through online networking

- Viewing of selective content

- Learning about new topics and domains

Greater the OSN usage, greater is the proportion of workplace-time spent autonomously based on the scenarios stated.

Autonomy levels of the individual members is denoted by $A_j$, where autonomy $A_j$ is determined by autonomy available in pursuing roles, decision-making and execution and varies in a normalized continuous scale of 0 to 1.

$\Sigma\ A_j/j = A$, is the average autonomy level in the organization.

Autonomy within the organization asymptotically reaches $A_{max}$ as U increases as shown below. Note, $A_{max}$ is less than 1. $A = f(U)$
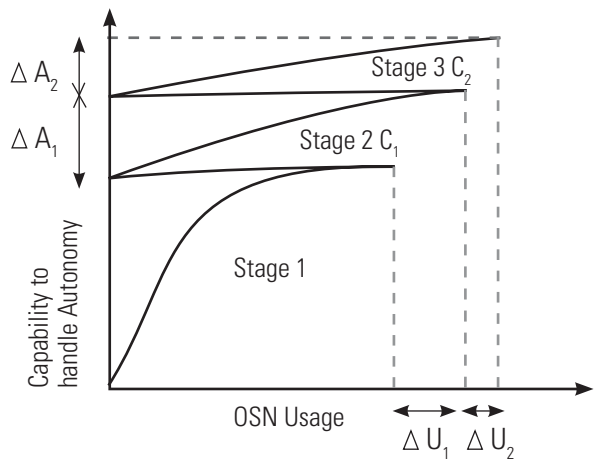


Figure 2. OSN usage effecting autonomy handling capability of organization members

Suboptimal Autonomy (Chaotic or Lack of Autonomy) can be made structured through higher OSN usage level (U) leading to Optimal Autonomy.

As OSN usage increases the capability to handle autonomy also increases exponentially and this beyond a point leads to a reduction in creativity (at $C_1$) so the individual starts to reduce OSN usage. This in turn reduces the autonomy handling capability by a small amount as shown in the descent in Stage 1 (Figure 2).

This is predicated to happen because a certain level of autonomy handling capability has already been attained.

Again on increasing OSN usage the autonomy handling capability only goes up by a rate lower than the earlier rise (because for the same level of OSN usage the individual has already reached a higher level of autonomy handling capability) and reaches a greater autonomy handling capability (because of his existing capability to handle autonomy feeding into building his further autonomy handling capability). However Stage 2 (Figure 2) reaches a fall in creativity at a level of creativity ($C_2$) and OSN usage which is greater than at the previous stage. $C_2 > C_1$ is as a result of the individual's existing capability to handle more weak links and a higher usage of OSNs.

Also, observe the gradient of descent is lower than in the previous stage (because of the retention of the autonomy handling capability resulting from increase in OSN usage in the previous stage). The gradient of descent keeps falling until it becomes zero i.e. the descent curve is parallel to the x-axis. At this point the autonomy handling capability and creativity maxima is logarithmically reached which are a part of stable state 2 beyond which the capability ceases to increase. At this point any further reduction or increase in usage of OSN does not affect the autonomy handling capability and the capability is permanently retained.

However if the individual reduces the OSN usage due to some odd reason some autonomy-handling capability does get retained. The gradient of ascent from that point will be a concoction of the gradient at Stage 1 along with the gradient at Stage 2.

Also, $C_3 - C_2 < C_2 - C_1$

**In terms of stable states in self-organization theory:**

**Stable State S1 = ($A_1$, $U_1$, m)**

*Usage Level = $U_1$, Capability of handling Autonomy = $A_1$*
*m = average number of weak ties*

**At a certain average optimal autonomy**

**$A_{opt} = A_{next}$**
**Stable State S2 = ($A_2$, $U_2$, n)**

*Usage Level = $U_2$, Capability of handling Autonomy = $A_2$*
*n = average number of weak ties*

Given a $U_j$ if importance of the usage level ($U_i$) is low, then reduction in usage of the OSN leads to greater reductions in autonomy handling capability. This is because casual usage does result in high autonomy handling capability retainment.

OSN usage U is comprised of importance of usage i and time/period of usage t. Generally the importance of usage (for strategic or higher priority purposes) of an OSN increases with an increase in the capability of handling autonomy. Thus the importance of usage i, is higher at $\Delta A_2$ than that at $\Delta A_1$.

From Figure 2 we see that $\Delta U_2 < \Delta U_1$. This is because of the following:

$\Delta U_2$ maps to a higher capability level ($\Delta A_2$) as compared to $\Delta U1$ as observed from the graph. Recall $U_j = \Sigma i_{p,j} * t_{k,j}$. At a higher capability level, there is an increase in formation and utilization of strong ties vis-a-vis weak ties. We also know that utilization of weak ties leads to higher creativity as compared to utilization of strong ties. Thus a lower quantum of OSN usage $\Delta U_2$ (as compared to $\Delta U_1$) leads to a point where creativity starts falling. This quantum of usage continues to reduce until it reaches a minima or possibly zero.

## IV. Summary and Conclusions

The primary contribution of this paper is the analysis of the effect of OSN usage on the autonomy of members of an organization. No relationship personal or otherwise is a step function in the real world. It is always a gradual process. Same is the case with autonomy in any organization; and autonomy is never granted one shot. Hence this analysis is done stage-by-stage. Even within a stage, rationale is there for gradual development.

It should be borne in mind that any capability of an individual does not blossom overnight. Same is the case with an individual's capability to handle autonomy. This again favors the approach we have adopted. Further we also map the stages in our analysis to stable states of self-organization theory. In order to understand creativity we make use of observations made on OSNs.

The contribution is more relevant to today's society

that is being more and more driven by OSNs. While it may be true that autonomy can generate chaos, it is also important to bear in mind that greater creativity gets generated in chaotic states taking the area to higher orders. It should not be forgotten that beyond an optimal autonomy creativity starts tapering. This may lead to a different approach to self-management. Thus OSNs may be devices that may take organizations in a direction of greater autonomy and consequently higher creativity that happens to be the key of solving current complex problems in any area.

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