STRUCTURAL IMPACTS OF NEW GENERATION CONTENT MANAGEMENT SYSTEMS

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ABSTRACT

As IS researchers, we continuously look for relevance of IT artifacts and its influences on various spheres of business. The advent of content management systems (CMS) brings out possibilities of research in the area. Organizations are increasingly using CMS to manage diverse range of content. Academic research on organizational impact of CMS is very limited. Hence, this paper explores the how CMS change the organizational structure within an organization as well as across the industry.

Keywords: *Content Management Systems*

INTRODUCTION

Information technologies have had profound impact on organizations in various ways. Research studies have examined the impacts of technology on organizational dimensions such as structure, size, performance, and centralization/decentralization [1]. Content management systems (CMS) are in vogue for more than two decades. These systems integrate disparate documents, data, and

information and provide a unified access to these resources within the organization as well as across organizations. CMS market has seen a rapid growth in the last few years. According to a report by Gartner [2] the worldwide CMS market was estimated to reach $4.2 billion in 2010 and it is expected to grow to $9.3 billion [3].

According to Munkvold et al. [4], academic research on CMS that focus on organizations utilizing content management systems are limited. Tyrva¨inen et al [5] also highlight the very limited research on content management utilizing enterprise perspective. This paper critically examines the impact of CMS on organizations through various theoretical perspectives.

CONTENT MANAGEMENT SYSTEMS AND ORGANIZATIONS

Content management is an integrated approach in managing information in the form of paper documents, data, reports, web pages, and digital assets [6]. Content management systems(CMS) cover variety of systems such as document management, records management, web content management, and enterprise content management [7]. CMS is also claimed to be on the "bleeding edge" of wider knowledge management systems[6]. Functionalities of a content management system have evolved over many years. Earliest content management systems pertain to management of documents. Document management systems were claimed to have ushered in a new era in which IS department could play an important in organizational transformation [8]. In the recent times, web content management systems have become more prevalent in order to manage growing corporate web pages the associated complex information resources [4]. Content management systems primarily perform four activities that consists of capture, organize, process and maintain the content [6]. Content management systems also manage the content of documents, web sites, intranets, and extranets in organizational or inter-organizational contexts [5].

Content management systems provide many benefits to the organizations. Some of the direct benefits are Simplification of work processes, time savings, improved access to information, and accuracy and currency of online information [6]. Some of the major functions of CMS are the collection of information, management of information, and publication of information [7]. Following table 1 outlines the internal and external affects of CMS on organizations. Following sections discuss them in detail.

Table 1: Internal and external affects of Content Management Systems

	Internal	External
Theories	Structuration Theory [9] Adaptive Structuration Theory [10] Strategic Contingencies Theory [11]	Disintermediation [12] Transaction cost economics[13]
Illustrations	Claims processing Bank loan approvals	News publishing, Movie distribution, online teaching

CONTENT AND INTRA-ORGANIZATIONAL STRUCTURE

It is widely acknowledged that technology cannot be introduced in organizations without considering its impact on organization processes, culture, incentive and reward systems [14]. Past studies have found a relationship between technology and structure of the organization [15]. Fry [16] summarized past studies in technology and structure and found overall support between technology-structure relationships.

With the traditional system, the frontline employee had more power by virtue of being an intermediary between the outside world and the decision makers inside. Such situations can still be seen in places where content management has not been sufficiently implemented. With the implementation of powerful content management systems, all the players can have access to real time information. Additionally the managers can have information about, who made the decisions and the total time each intermediary took in processing the document. Workflow facilities in content management allow managers to impose rules, bypass employees and get real time direct access to information, and automate workflow. Workflow can cause "disintermediation" of intermediaries of information flow within the organization. This disintermediation within organizations causes power shift within the organization.

In similar vein, the upward movement of information from the line employee too has seen a shift from serial movement to a more simultaneous access. This has come about largely due to the advent of enterprise resource planning tools. A classic example here is the role of accounting where the use of technology changed the structure within an organization. Accounting and

control Systems formerly made across organizations through the operation of markets, are now made within organizations [17]. Such workflow tools cab used to debureaucratize the organization.

Theories

The effect of workflow management software in organizational structures can be explained by the role of in Information technology on appropriation of structures as per adaptive structuration theory. Borrowed from structuration theory by Giddens [9], adaptive structuration theory by DeSanctis and Poole [10] forms the underlying basis for studying the role of information technologies in organization change . Another theory closely related to our study is the strategic contingencies theory which posits that interdependent sub-units in an organization have a power distribution [11]. However we still have paucity of methods in capturing this relationship via constructs [18].

Content Management and Power

Research on relationship between IT and power contains multiple paradigms grounded in various disciplines including political science, management, sociology, and marketing [19]. One view treats IS as a tool to neutralize power asymmetries among organizational actors, hence enabling rational argumentation in the workplace [20]. While extensive research has been done in the field of benefits from automation and workflow [21], little has been done regarding the role of implementing such systems in the structure of the organization. Secondly, the research done have been done on arcane technologies like CT scans [22] and CASE tools [23].

A hypothesis that such an IT system has influenced the internal structure of the processing unit, can be supported by evidence found in related studies involving the relationship between technology and structure. These changes could range from radical structural changes to subtle shifts of power equation between the processing intermediaries. While IT has caused radical changes by way of disintermediation, automation, displacement of labor [24], inter-occupational shifts in skills [25] etc, workflow tools like claims processing are at a much more granular level typically only involving intermediaries in the workflow. We showcase two cases to illustrate the role of IT tools in changing structure.

Illustration 1: Claims processing

Modern claims processing have brought about facilities that were otherwise impossible under the 'old' method [26]. Claims processing is a typical area where implementation of workflow tools have brought about changes which are shaping business practices in the insurance industry[27]. Control of information is a source of power [28]. The super-user of the workflow has the power to oversee, block, route, reroute information and enforce rules among the intermediaries of the workflow. The rerouting of information, caused by way of implementing the workflow tools may cause shifts in power. It may also form new dependencies and break up old ones, thereby influencing structural changes [25]. The intermediaries in the workflow may witness shifts in two of the three sources of power: resource control and network centrality as discussed by Astley et al [29].

Illustration 2: Loan approval

Loan approval is another area where content management in the form of artificial intelligence automation workflow implementations etc. has radically changed the structure of the business. To start with, the automated underwriting technology processes thousands of applications [30], something not possible by humans. The automated process is more accurate and less prone to bias which humans inherently have. This has lead to fewer underwriters and closers [31] while many lenders feel "a loss of control" over the process [32].

CONTENT MANAGEMENT SYSTEMS AND INDUSTRY STRUCTURE

Impact of CMS on the Inter-organizational realm has not been extensively researched. Even before the advent of CMS, technologies such as electronic data interchange and inter-organizational systems linked various business partners. These electronic communication channels have given rise to new forms of organizational partnerships and collaborations. Transaction cost economics is widely used to explore the impact of IT on organization structure and it explains the formation of market or hierarchies [13]. In markets, independent suppliers provide products/services to the focal organization while in-house production is done in hierarchies. Using transaction cost economics, Malone et al., [33] systematically analyzed the influence of IT in the various facets of a transaction. Their main findings are: use of IT can make organization to move towards hierarchies. Certain industries are information intensive and these industries can effectively leverage the investments in IT to change the structure of the industry.

Their study focused on IT's influence in reducing the transaction cost and this made them to claim that increasingly companies will move towards a market transactions. Later study by Clemmons et al. [34] took a different perspective on the role of IT on the industry structure. They claimed organizations will "move to the middle" (i.e.) they may not purely rely on either market or hierarchies. In their study, they split the transaction cost into many components such as production cost, search cost, coordination cost etc. Based on these varying cost structures they claimed IT can reduce the coordination cost and hence they will move to the middle. This again is dependent on industry as well as product characteristics. IT, especially Internet is also claimed to change the industry structure through disintermediation and reintermediation [12]. Traditional intermediaries in an industry are eliminated while at the same time new forms of electronic intermediaries enter the market through reintermediation. For example: in the airline industry, we have seen the role of travel agents marginalized through disintermediation while news intermediaries such as online travel booking websites have come into existence.

With rapid growth of web, content management systems for the web have become imperative [35]. Web based content management systems have evolved from the task of managing website content to more powerful systems that could change the industry structures. Web CMS provides features for the creation and deployment of digital content to customers, suppliers, partners via extranet, Internet, or intranet [35]. These content management systems are adept in delivering the content over the web. CMS can also foster inter-organizational collaboration as shown in Statoil's study wherein they implemented CMS with the rationale of creating effective and efficient collaboration between the organizational stakeholders, including customers and other partner organizations [4]. CMS can also provide way for provisioning the content and monitor and control the content distribution [35].

CONCLUSIONS

This paper brings out the role of IT in influencing structures within and across industries. The presence of CMS in various forms like web, content management systems etc., has changed intra-organizational and inter-organizational structures. This paper utilized illustrated case examples to articulate the impact of CMS on organizations.

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