RUNNING HEADER: Social Development

KAM 1

Principles of Societal Development

Technology And Organizational Change

Walden University

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Ph.D. in Applied Management and Decision Science

Organizational Change Management

First Assessor: Dr. Marcia Steinhouer

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August, 2001

8110 Breadth Abstract

This paper explores social theory and how social changes are examined. The theorists Emile Durkheim, Max Weber, and Karl Marx will be discussed individually. Each theorist also will be compared and contrasted with the other. A conclusion will be offered giving personal observations of the author.

8122 Depth Abstract

This paper explores the relationship between introduction of new technology and the effect it has on the organizations and societies in which it is introduced. The paper takes a historic view of the issue and then looks at recent events. The paper focuses on the implementation of information technology and the change management activities associated with an implementation project. Different perspectives are explored as well as a look into deeper issues of organizational turmoil in companies as new processes are assimilated in major business process reengineering projects driven by new information technology. Also contained in this work is an annotated bibliography of recent articles on the various subjects contained in the paper. The paper concludes with a summary and suggested areas of additional study.

8232 Application Abstract

This paper explores the effects of change management activities in ERP system implementation projects. It explores current historical events and theories from recent publications. Examples of how ERP implementations can adversely affect business performance are presented as well as potential ways of avoiding these problems. A survey is conducted using nineteen locations of a Fortune 500 company that have recently completed ERP system implementations to determine what effect organizational change efforts had on each location's ability to meet its business objectives. The results of the survey are presented as well as recommendations for future ERP implementations.

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Introduction

As societies evolve, they develop rules and rituals that differentiate themselves from others. In an attempt to explain these phenomena in a scientific manner, the scientific discipline of sociology has developed over the past century:

> Only in the course of the past century or so has a new method been applied to the study of human society and social behavior – the method of science, which provides answers drawn from facts collected by systematic research (Robertson, 1987, p. 3).

This paper will examine some of the writings of three Social theorists: Karl Marx; Max Weber; and Emile Durkheim.

What is social theory? Alex Callinicos, professor of politics at the University of New York, suggests that it has three identifying features:

1. It is concerned with society, which is conceived as being distinct from political institutions.
2. It distinguishes between and seeks to make generalizations about different kinds of society.
3. It is concerned in particular to analyse modernity – the form of society which emerged in the modern West over the past few centuries and

> has come to dominate the world as a whole. (Callinicos, 1999, p. 10)

The primary function of a theory is to attempt to explain a particular phenomenon in terms of another phenomenon that is viewed as explanatory. It is this explanatory function that distinguishes a theory from related but nonexplanatory concepts (Kinloch, 1977).

Social theory is a set of assumptions about society and social phenomena in reference to their separate societal realities. This differentiates social theory from other systems of thought that emphasize mystical or theological explanations of these phenomena. Sociological theories grew out of reactions to specific societal conditions:

> Organic theory evolved in reaction to revolutions in Europe, with a major emphasis on the reestablishment of social order and social control, while structure functionalism represented a reaction to America's economic needs during the 1930s. Macrosociological theory, in general, has developed in reaction to a society's economic and technological needs, the latest emphasis being placed on cybernetics and systems theory (Kinloch, 1977, p.37).

Until the period of enlightenment in the nineteenth century, religious philosophers attempted to explain the reasons for societal differences using various forms of myth, speculation, superstition, and folk wisdom handed down over the course of history. "Christian thinkers such as St. Augustine had developed a philosophy of history in which the selfish actions of individual humans unwittingly serve the purposes of God's secret plan for the world" (Callinicos, 1999, p. 17). Prior to the mid 1800s, social thinkers were more concerned with defining how society should be than studying current social conditions. As the Industrial Revolution began making sweeping social changes in Europe in the middle of the nineteenth century, social thinkers began studying the social turmoil of the times (Robertson, 1987).

Industrialization changed the social and physical landscape of Europe. Population shifted from rural areas to towns where they worked as industrial laborers. As towns grew, ancestral customs and values began to have a diminishing influence on the lives of these laborers:

> The ancient view that the social order was preordained by God began to collapse. A rising middle class, spurred by the examples of the French and American revolutions, clamored for democracy, and aristocracies

> and monarchies crumbled and fell. Religion began to lose its force as an unquestioned source of moral authority. Rapid social change became the norm rather than an abnormal state of affairs, and people could no longer expect that their children's lives would be much the same as their own (Robertson, 1987, p.12).

The three theorists examined in this paper take different approaches to the study of sociology. This paper will explore both the critical and analytical techniques used by these theorists.

Shortly before Marx's death, Frederick Engels began to publish a set of writings that depicted Marxism as a systematic doctrine. In the decade following Marx's death, Marxism had become the official philosophy in the Soviet Union. When Karl Marx died in 1883, Max Weber and Emile Durkheim were just beginning their academic careers. Both Durkheim and Weber used the writings of Engels, Kautsky and Labriola as the object of their critical evaluations of Marxism. Marx's writings may be compared with those of Durkheim and Weber as contrasting forms of social theory (Giddens, 1971).

Max Weber

Max Weber was born in Germany in 1864. He was educated in economics, history, law, philosophy, and

theology. He was involved in German politics (Kinloch, 1977). Weber's work includes contributions to theories on social class, political legitimacy, modern law, and world religions (Tribe, 1989). Weber was a modernist in his approach to social theory. His theoretical perspective was based on history, economics, philosophy, law, and historical analysis (Burger, 1976).

Three themes flow through Weber's work that form his central body of social theory. First, is his focus on civilization processes and how Western society evolved. Second, is his focus on the role rationalization played in the development of Western society's systems of law, science, politics, commerce, and religion. Third is his concern with comparative studies of capitalism (Weber, Gerth, & Mills, 1967). Weber's writings on the spirit of capitalism describe it as the earning of more and more money coupled with the avoidance of enjoying life. He states that acquisition is the ultimate purpose of life. He says that the origins of capitalist spirit developed from the Protestant Reformation of the sixteenth and seventeenth centuries (Weber, 1904-1905/1958).

Weber used the principle of rationalization to understand the pattern of historical development (Weber, et al., 1967). This term defines the process by which society

and individual actions are mastered by planning, technical procedure, and rational action. This concept of rationalization refers to two broad trends in societal development. First, to explain the natural and social world, social processes become more reliant on calculation and technical knowledge. Second, is the tendency for humans to rely more on empirical reality than folklore as a means to understand the world in which we live (Weber, Roth, & Wittich, 1978). Weber stated that:

> We have taken for granted that sociology seeks to formulate type concepts and generalized uniformities of empirical process. This distinguishes it from history, which is oriented to the causal analysis and explanation of individual actions, structures, and personalities possessing cultural significance (Weber, et al., 1978, p. 19).

Weber described two forms of acquisition, forceful and capitalist. In forceful acquisition, wealth is obtained by lawful or unlawful military force. This means of acquisition is not concerned with the efficiency or profitability of the acquisition. In capitalistic acquisition, profits are pursued by peaceful transactions instead of forceful ones. This concern for profits places an importance on efficiency, which leads to new procedures

in the pursuit of higher profits. This rationalization, based on calculative activity, is performed to obtain the maximum profit from an activity and accurately measure it (Weber, 1904-1905/1958). The information gathered from this activity can then be used to gain higher efficiencies through process changes.

The term calculation is used in Weber's theme of rationalization. This describes how economic values brought about a form of calculation in human activities that was more precise than any traditional method of social measurement. Weber believed that money rationality, stressing counting and quantitative reasoning, propelled calculation as a framework for ordering the world. This counting rationality eliminates all but quantitative considerations and extends money rationality into the scope of all human action (Weber, et al., 1978).

Another concept in Weber's work is that of rationality. He uses this term to say that, in modern society, action can vary depending on the orientation of the actor and the social situation of the action (Weber, et al., 1978). For example, scientists and lawyers can be subject to different forms of rationality. In action situations, the means individuals use to obtain their ends vary. In this context, rationality can be defined as a

course of action where means and ends are weighed prior to action.

Weber also wrote on his theory of capitalism. By studying agrarian societies, he traced economic evolution. He studied land systems and the differences in the economics of households, villages, and towns. He concluded that feudal economies emerge only in the west. He identified three characteristics of these economies. First, was the power proprietors had over land holdings. Second, was the development of a dependent serf population to perform productive labor. Third, was how political and legal rights were bestowed on those who held economic power (Weber, 1922/1961). Weber described it this way:

> Everywhere the lords strove to secure immunity as against the political power above them. They forbad the officials of the prince to come upon their territory, or if they permitted it the official had to come directly to the lord himself for the performance of his mission on behalf of the political authority, such as collection of feudal dues or serving of military summons. With this negative aspect of immunity is connected a positive aspect. At least a part of the immediate exercise of rights taken away from the officials of the state became the prerogative

> of the holder of the immunity. In this form immunity exists not merely in the Frankish empire but before it in those of Babylon, ancient Egypt, and Rome (Weber 1922/1961, p. 63).

Weber asserted that there were four non-economic factors involved in capitalist development. First, was the emergence of a system of rationality. This became noticeable in the area commerce. The principle elements of this economic activity are quantitative reckoning and the dominance of quantitative thinking in economic life. The speed with which commerce is conducted drove the need for exactness in commercial activity. Weber maintained that the creation of competitive markets and the fluctuation of prices led to the need for bookkeeping and exact accounting for transactions (Weber, 1922/1961). Weber observed the need for transactional accounting this way:

> Rational commerce is the field in which quantitative reckoning first appeared, to become dominant finally over the whole extent of economic life. The necessity of exact calculation first arose whenever business was done by companies. In the beginning commerce was concerned with a turnover so slow and a profit so large that exact computation was not necessary. Goods were bought at a price which was fixed traditionally,

> and the trader could confine his efforts to getting as much as he could in sale. When trade was carried on by groups it was necessary to proceed to exact bookkeeping in order to render an accounting (Weber 1922/1961, p. 170).

The second non-economic factor was the development of a system of calculable law. Weber maintained there must be a correlation between legal rights and the rules of economy. This development freed commercial activity from the inconsistencies of traditional arbitration and enabled industry to become more rational. Weber believed that capitalism would not have been possible without the development of the legal system as it pertains to commercial activity (Weber, 1922/1961). Weber explained the link between legal and commercial systems this way:

> With difficulty, the people adapted themselves to the discipline of the work. But the power of the possessing classes was too great; they secured the support of the political authority through the justices of the peace, who in the absence of binding law operated on the basis of a maze of instructions and largely according to their own dictates. Down into the second half of the 19th century they exercised an arbitrary control over the labor force and fed the

> workers into the newly arising industries. From the beginning of the 18th century, on the other hand, begins the regulation of relations between entrepreneur and laborer, presaging the modern control of labor conditions (Weber 1922/1961, p. 228).

Third, was the rise of the rational state. This state is defined by a set of social institutions that are based in law. Weber believed that these institutions exist only in modern society. Their development was not possible in feudal economies because the dominant classes had too much power over commercial activity. This also meant that the economy was under the control of the aristocratic classes which functioned as autonomous officials. These officials made decisions based on personal beliefs and associations not founded in written law which made commerce difficult (Weber, 1922/1961). “Very different is the rational state in which alone modern capitalism can flourish. Its basis is an expert officialdom and rational law” (Weber 1922/1961, p. 250).

The fourth was the development of a system of ethics and the growth of the gain spirit (Weber, 1922/1961). Weber described a code of conduct based on ethical norms which govern commercial activity and bring economic and religious aspects of society into a relationship with each

other (Weber, 1904-1905/1958). Weber believed that restrictions on gain seeking occur more in societies where religion is a dominant force. He found that unrestricted gain tends to place individuals in competition with each other and also works externally on society to erode the system of ethical restrictions that stem from religious beliefs (Weber, 1922/1961). Weber noted the following relationship between competition and communal societies:

> Originally, two opposite attitudes toward the pursuit of gain exist in combination. Internally, there is attachment to tradition and to the pietistic relations of fellow members of tribe, clan, and house-community, with the exclusion of the unrestricted quest of gain within the circle of those bound together by religious ties; externally, there is unrestricted play of the gain spirit in economic relations, every foreigner being originally an enemy in relation to whom no ethical restrictions apply; that is, the ethics of internal and external relations are categorically distinct. The course of development involves on the one hand the bringing in of calculation into the traditional brotherhood, displacing the old religious relationship. As soon as an accountability is established within the family community, and economic

> relations are no longer strictly communistic, there is an end of the naïve piety and its repression of the economic impulse (Weber 1922/1961, p. 261).

Emile Durkheim

Born in France in 1858, Emile Durkheim was raised in a Jewish family. His father served as an orthodox rabbi, while his mother supplemented the family income by working outside the home (Lukes, 1973). Educated in law and philosophy Durkheim was primarily concerned with the understanding of social norms.

Durkheim's work is based on three major assumptions. First, society is more than the sum of its parts and has an independent existence. Second, social integration is based on society's division of labor. Third, crime and other forms of deviant behavior reinforce group norms and contribute to their ongoing change by modifying those norms (Kinloch, 1977).

Durkheim was a major contributor to the development of sociology as a new science (Kinloch, 1977). He believed that social facts require objective study and that sociology should attempt to determine the underlying societal needs that these facts represent. He advocated the use of such methods as correlation and experimental and

comparative techniques. He also understood that these social facts would change, over time, as societies evolve. He described it this way:

> If, therefore, reality can be thus understood at a glance, the study of present phenomenal reality is no longer of any practical interest: and, as this interest is the justification for its study, it is henceforth without a purpose. Thus, an incentive is given to turn from the very subject of our science, namely, the present and the past, and proceed at once to the future. Instead of seeking a comprehension of facts already acquired, it undertakes immediately to discover new ones, more in accord with the ends pursued by men (Durkheim, 1895/1938, p.16).

Durkheim made the first real breakthrough in sociological research with his study of suicide (Robertson, 1987). As French nationalism began to grow, so did the use of science to solve social problems (Fenton, 1984).

Durkheim focuses on social solidarity. First, believed in a system of social bonds that link individuals to society. Without these bonds, and the pooling of efforts, individuals would be develop separately. Second, he also described a system of social relations which link individuals to each other and society. His third aspect of

social solidarity involves a system of social interchanges that go beyond the brief transactions that occur during an economic exchange. Finally, Durkheim describes an integration that links individuals to social groups to which they do not belong (Durkheim, 1893/1933).

Durkheim used the terms “mechanical” and “organic” to describe solidarity. Mechanical societies are based on roots of common identities and similarities. “The totality of beliefs and sentiments common to average citizens of the same society forms a determinant system which has its own life; one may call it the collective or common conscience” (Durkheim, 1893/1933, p.79).

These roots link a society’s individuals together equally so as to discourage individual autonomy. In these societies, the collective rules and social practices are usually religious and involve all aspects of social life. The division of labor is basic and is organized so that individuals perform tasks for collective purposes. The individual is not distinguishable from the collective whole. Social bonds are ones of obligation rather than contract. Durkheim listed four characteristics of common conscience:

1. It is, in effect, independent of the particular conditions in which individuals are placed; they pass on and it remains.
2. It is the same in the North and in the South, in great cities and in small, in different professions.
3. Moreover, it does not change with each generation, but, on the contrary, it connects successive generations with one another.
4. It is the psychical type of society, a type which has its properties, its conditions of existence, its mode of development, just as individual types, although in a different way. (Durkheim, 1893/1933, p. 80).

In organic societies, labor is much more specialized and individuals are more strongly linked to each other than they are to society as a whole. These links evolve from a division of labor where individuals become more reliant on others to perform separate economic functions which they are not able to carry out on their own. “In effect, individuals are here grouped, no longer according to their relations of lineage, but according to the particular nature of the social activity to which they consecrate themselves. Their natural milieu is no longer the natal milieu, but the occupational milieu.” (Durkheim, 1893/1933,

p.182). These links tie individuals to each other out of dependency on each other. Social bonds are enforced by contracts instead of customs or religious beliefs. An individual's place in society is determined by occupation. The individual has greater autonomy with legal rights and freedoms (Durkheim, 1893/1933).

Durkheim studied suicide from a sociological perspective. He believed that social causes for suicide precede individual causes. He studied mortality data from public records of societies throughout Europe. This data included cause of death, age, marital status, occupation, military service, and religion. Durkheim used the term "social suicide rate" to refer to the number of suicide deaths in a society and the patterns for that society (Durkheim, 1897/1951).

Durkheim observed that suicide rates varied from country to country, and, for the period of time studied, the rates appeared to be stable while the general mortality rates fluctuated. This stability meant that each society produced a yearly precision of rates that pointed to underlying social causes. Considering these statistics, along with the other demographic data collected, each society produced suicide rates distinct from the others (Durkheim, 1897/1951).

Durkheim came to three fundamental conclusions about the stability of suicide rates. First, he believed that individual motives for suicide varied while social suicide rates were stable. Second, the stability of rates within a society meant that each society produced a quota of suicide deaths. Third, the suicide rate represented a factual order with regularity that can be studied (Durkheim, 1897/1951). He described it this way:

> The suicide-rate is therefore a factual order, unified and definite, as is shown by both its permanence and its variability. For this permanence would be inexplicable if it were not the result of a group of distinct characteristics, solidary one with another, and simultaneously effective in spite of different attendant circumstances; and this variability proves the concrete and individual quality of these same characteristics, since they vary with the individual character of society itself (Durkheim, 1897/1951, p. 51).

Karl Marx

Karl Marx was born in Germany in 1818. He was raised in the Jewish faith, but converted to Protestantism to escape the persecution of Jews in German society. He

studied history, philosophy, and law. Marx became involved in social issues and began collaborating with Frederick Engles in 1848. This collaborative relationship would continue for the rest of his career (Rubel & Manale, 1975).

Marx believed that the material conditions of life define one's social consciousness and that materialistic change results in social change. He believed that a society's legal and political systems are defined by the ways in which people satisfy their primary needs (Kinloch, 1977).

Marx became involved in the workers' movement in Brussels. This led to the writing of The Communist Manifesto in 1848. This manuscript had an enormous impact on the workers' movement in Europe during this period (Rubel & Manale, 1975).

Marx studied commodities in his analysis of capitalism such as bread, shoes, heating oil, etc. He studied commodities from two perspectives. First is the use value of the commodity. This referred to the ability that it has to satisfy a human need. He described use-values this way:

> This property of a commodity is independent of the amount of labour required to appropriate its useful qualities. The use-values of commodities provide the material for a special branch of knowledge, namely the

> commercial knowledge of commodities. Use values are only realized in use or in consumption (Marx, 1867/1977) p.126).

The second is the exchange value. This is the value the commodity has in obtaining something else of value. This is the ability for the value of one commodity to be expressed in the form of quantities of another commodity. He described exchange-value this way:

> Exchange-value appears first of all as the quantitative relation, the proportion, in which use-values of one kind exchange for use-values of another kind. The relation changes constantly with time and place. Hence exchange-value appears to be something accidental and purely relative, and consequently an intrinsic value (Marx, 1867/1977) p.126).

This constituted a common element between the two different commodities that made their values equal in their exchange for each other. Marx observed phenomena. First, the use value becomes irrelevant. Second, the exchange value becomes so dominant that it shapes all other social relations (Marx, 1867/1977).

This new relation of value that is central for three reasons. First, in reality commodities are not comparable as exchange values since each satisfies a different need.

Second, Marx thought that exchange value is found only in capitalist societies and not in other modes of production. Third, since use value disappears, all value in a capitalist society is expressed in terms of a quantitative relation between one commodity and another (Marx, 1867/1977).

Marx described two characteristics of labor; useful labor and abstract labor. He observed that a coat sells for twice as much as ten yards of linen and therefore has twice the exchange value of the linen. Both commodities satisfy a human need and both require a certain amount of productive labor to bring them into existence. This productive activity is determined by a distinct human activity aiming for a specific result. Marx referred to this capacity for human labor to bring about utility in a commodity as useful labor. Setting aside the fact that different skills are required to produce coats and linen, the skills are still forms of labor. Marx drew the distinction that all labor is an expenditure of human energy. He refers to this quantitative view of labor as abstract labor. In a capitalist society where one measures the labor content of a coat and linen and finds the coat contains twice as much labor, then it explains why the coat

costs twice as much as the linen (Marx, 1867/1977). Marx describes it this way:

> It is moreover a matter of indifference whether the coat is worn by the tailor or his customer. In both cases it acts as a use-value. So, too, the relation between the coat and the labour that produced it is not in itself altered when tailoring becomes a special trade, an independent branch of the social division of labour (Marx, 1867/1977, p. 133).

Marx describes division of labor by using the terms simple and complex cooperation. Simple cooperation is defined as a method of production where one capitalist employs a number of workers who perform the same work without specialization. “The colossal effects of simple co-operation are to bee seen in the gigantic structures erected by the ancient Asiatics, Egyptians, Etruscans, etc.” (Marx, 1867/1977, p. 451). Complex cooperation is when each individual performs specialized operations side by side. Each operation is assigned to a separate, specialized worker. The commodity is produced through the combined actions of the workers. When this happens, according to Marx, the commodity has gone from being a product of an individual craftsman to a social product of the union of craftsmen (Marx, 1867/1977).

Karl Marx And Max Weber

Karl Marx's methods for studying the theoretical system included historical sociology and the application of dialectical materialism. Max Weber's methods included the interpretive understanding of meanings and the use of imaginary experiments (Kinloch, 1977).

Max Weber disagreed with Karl Marx on the central task of social theory. Marx believed that the purpose of social theory was to change society. He believed that theory must be linked to social and political action. Weber believed that the main task of social theory was to search for truths by gathering facts about society. Weber believed that Marx used theoretical concepts to criticize society. In contrast, Weber believed that the concepts in social sciences should be neutral and not based on value judgments (Weber, 1904-1905/1958).

Marx had a very materialistic view of history. He believed that all social functions could be reduced to economic laws, and that these laws lead to the division of society into classes (Weber, 1904-1905/1958). Weber believed in the four non-economic factors of a system of rationality; a system of law and citizenship, the rise of the state, and the development of ethics (Weber, 1922/1961).

Weber's concept of rationalization placed him in opposition to Marx. Marx felt that material factors were dominant in history while Weber believed in a more general principle that cut across the economic, legal, political, and religious spheres of society (Weber et al., 1967). Marx believed that class struggle is an uninterrupted fight that continually results in the reconstitution of society or the common ruin of contending classes (Marx & Engels, 1848/1988). Weber formed his views sixty years after Marx developed his ideas and theories. This gave Weber time to observe societal evolution and see that non-economic factors played a much more significant role in societal development than Marx had observed. (Weber, 1922/1961).

Karl Marx And Emile Durkheim

Karl Marx's methods for studying the theoretical system included historical sociology and the application of dialectical materialism. Emile Durkheim's methods included measurable social facts, historical material, comparison, and proof through concomitant variation (Kinloch, 1977). Karl Marx and Emile Durkheim both wrote on the subject of the division of labor. Marx believed that economic factors drove the division. He also believed that capitalists used the division of labor to turn it into a commodity and

remove the facet of craftsmanship from it (Marx, 1867/1977). Durkheim believed that more factors than economics influenced the division of labor. His focus was on social solidarity. He believed that the social bonds, formed by the dependency of individuals on each other, influenced the development of societies (Durkheim, 1893/1933). Durkheim believed that society exists over and above the individual. He also believed that society exercises great power over the individual. Marx believed that society is created by the action of individuals (Marx & Engels, 1848/1988).

Marx described social change in terms of revolution caused by economic strife. He believed that economic factors alone drove these changes (Marx & Engels, 1848/1988). Durkheim described social change in terms of societies moving from mechanical to organic societies. These changes involved economics as well as other factors associated with social status (Durkheim, 1893/1933).

Durkheim used his energy to attempt to explain and improve the human condition in society through his studies on Social suicide rates (Durkheim, 1897/1951). Marx, on the other hand focused on criticizing society and justifying revolution (Weber, 1904-1905/1958).

Emile Durkheim And Max Weber

Max Weber's methods for studying the theoretical system included the interpretive understanding of meanings and the use of imaginary experiments. Emile Durkheim's methods included measurable social facts, historical material, comparison, and proof through concomitant variation (Kinloch, 1977).

Emile Durkheim and Max Weber studied religion in different contexts. Durkheim studied the differences in the suicide rates of Protestants and Catholics. He examined the hold religion had on the lives of individuals as he set out to explain the higher suicide rates among Protestants. Catholics, he observed were accepting of the demands of religious doctrine. Protestants, on the other hand, were more critical of religious doctrine (Durkheim, 1897/1951). Weber studied the differences between Catholics and Protestants in the context of commercial activity. He observed that Catholics had a well-defined path to salvation rooted in atonement and confession. In Catholicism, one could earn salvation through good works. In Protestantism, Weber noted, this is not the case. He concluded that the elimination of attainable salvation and Protestant self-denying actions of prudence, frugality, and thrift were linked. He believed that there was a link

between these Protestant religious teachings and work ethic (Weber, 1904-1905/1958). Durkheim noted that Protestant countries had higher rates of suicide than Catholic ones (Durkheim, 1893/1933).

Conclusion

It is interesting to study Marx, Durkheim, and Weber, their differences in approach, and the time span they cover. Each theorist was influenced by the social and economic climates in which they lived. Each had a different purpose for his work (Kinloch, 1977).

Marx, in his study of Capitalism and social development, focused on economics as the single cause of social change (Marx, 1867/1977). He believed that continual class struggle resulting in the ongoing destruction and rebuilding of societies was the natural progression for social change in industrialized societies (Marx & Engels, 1848/1988).

Max Weber, having sixty years of sociological history to study since Marx's writings, was critical of his theories (Weber, et al., 1978). He believed in studying social theory from a historical perspective (Weber, 1904-1905/1958). Weber studied how societies evolved and the roles that non-economic factors played in societal

development (Weber, et al., 1967). He believed that economic values drove society to adopt more precise measuring and quantitative reasoning (Weber et al., 1978). When coupled with his historical studies of societal evolution and methods of acquisition, some of his writings can be used as foundation material for studies on how technology has played a part in social transition (Weber, 1904-1905/1958).

Emile Durkheim, like Weber, had the benefit of observing societal development after the writings of Marx. He focused on the elements of society that bond its members together (Durkheim, 1893/1933). Durkheim performed a scientific study of suicide from a sociological perspective. He concluded that, while individual motives for suicide varied, suicide rates within a society were stable (Durkheim, 1897/1951). This study established suicide as a social fact.

An examination of these three theorists underscores the advances in social science in the early years of its formation. Marx seemed to have a revolutionary agenda that came through in his work. In the time between Marx's writings and Weber and Durkheim's, research methods developed and the agenda for social science had evolved from that of explaining and justifying revolution to that

of observing and analyzing sociological phenomena. Marx, however, being the pioneer that he was in this new field did not have the luxury of observing the developments in the years that followed his writings. In the spirit of each scientist building on the work done before him or her, it would be interesting to know what Karl Marx's writings would have looked like had he had the benefit of those sixty years of societal evolution and social-scientific method development.

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RUNNING HEADER: KAM 1 DEPTH

SBSF 8122 - KAM 1 Depth

Cross-cultural Aspects of Organizational Change

Relationships Between Technological And Societal Change

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Annotated Bibliography

Bhatt, G. D. (2000). “Exploring the relationship between information technology, infrastructure and business process re-engineering.” Business Process Management Journal **6**(2): 139-163.

Business process redesign (BPR) is a management technique to radically transform organizations for dramatic improvement. Information technology (IT) plays a critical role in BPR. This study examines the links between IT infrastructure and BPR. The moderating effects of industry type, and information intensity of a firm is also analyzed.

Data for the study was gathered through a survey of Fortune 500 US firms at divisional levels. Out of 1,200 questionnaires mailed to Fortune 500 firm-divisions, 124 responses were received. Out of 124 firm-divisions 73 firm-divisions were found to be adopting BPR techniques; 39 firm-divisions were found to be adopting incremental improvement approaches. The rest of the responses were incomplete and could not be used. For data analysis, only 73 firm-divisions were considered.

The results of the study support the hypotheses that network infrastructure affects the dimensions of

BPR, but data integration was not found to be significantly affecting the BPR dimensions. The moderating effect of industry type was found to be significantly affecting the relationship between network infrastructure and BPR dimensions. Other relationships were not found to be significant.

This research was relevant because it addressed the effect that an organization's infrastructure had on the success of its BPR efforts as they related to the introduction of technology-related tools.

Brightman, B. K. and M. J. W. (1999). “Building organizational citizenship.” Management Decision **37**(9): 678-685.

This article asserts that an organization’s success is built on the participation and good work of its staff. It advises leaders to view their organization as a country, and frames their primary management challenge as creating “organizational citizenship”. It defines "organizational citizenship" as a voluntary consistent commitment to the goals, methods, and ultimate success of the organization. Most leadership strategies are designed to create specific business results; their effectiveness will

depend on the creation of a culture of patriotism throughout the organization.

The research for this article is based on published literature and the experiences of KPMG, one of the world's largest professional services firms.

This article is relative to my work because it discusses the use of common systems and processes to build a commitment to the organization from its employees.

Bromley, H. (1997). “The social chicken and the technological egg: Educational computing and the technology/society divide.” Educational Theory **47**(1): 51-66.

This article examines the role of technology in social change. It examines the use of computers in schools. It discusses the pressure to place computers in schools. It discusses the social aspects of educational computing.

Research for this article is based on published works.

This article is relevant to my work because it discusses the effect of different technologies on

society from the perspective of how it influences young people.

Bryson, J. M. A., Sharon R. (2000). “Applying large-group interaction methods in the planning and implementation of major change efforts.” Public Administration Review **60**(2): 143-163.

As managers plan for major change efforts, they are increasingly relying on large-group interaction methods to involve large numbers of people. These methods are structured for engaging large populations to: (1) bring relevant information to bear on the problem; (2) Build commitment to the solutions; (3) integrate planning and implementation; and (4) reduce the time required to plan and execute major projects. This article focuses on how public and non-profit organizations effectively deal with change. The authors compare and contrast seven methods (i.e., Real Time Strategic Change, Search Conferences, Future Searches, Strategic Options Development and Analysis, Strategic Choice, Technology of Participation, and Open Space Technology) to illustrate strengths and weaknesses.

This article's research is based on previously published information. It explored large group interaction methods in different public and non-profit environments.

The research is relevant in that it addresses how change-introduction methods are reacted to. In general technology implementations involve large groups in an organization.

Chan, P. S. and C. Land (1999). “Implementing reengineering using information technology.” Business Process Management Journal **05**(4): 311-324.

Reengineering is becoming an increasingly popular option for corporations seeking radical process change. Central to the success of reengineering is the coordination of information technology (IT) throughout the organization. IT represents the core mechanism of information flow. When companies improve core IT processes, such as gathering data only once, integrating cross-functional systems or increasing information speed to customers, business process change is possible. For IT to be an enabler of reengineering or organizational change, managers must know the various methods by which IT can help advance

process change, understanding that there are numerous pitfalls that may doom any change effort using IT.

The research for this article is based upon other research from trade journals and magazines. The authors cite several specific industry examples to make their points.

This article is relative to my work because it gives me a basis industry examples of events that are symptoms of potential technology implementation problems.

Chung, H. S. and C. A. Snyder (2000). “ERP adoption: a technological evolution approach.” International Journal of Agile Management Systems **02**(1): 24-32.

This article examines the idea that information technology (IT) needs to be aligned with an organization's mission in order to support its objectives. It examines the recent shift from deploying individual functions, which should be used in an integrated manner, to systems whose functions are integrated. The evolution of enterprise resource planning (ERP) from manufacturing resource planning (MRP) is examined.

The research is based on prior writings. The article did address the primary ERP systems in the marketplace.

The research is relative to the primary IT-driven initiatives of the current years' history. It addresses the impact of ERP systems on IT and business managers..

Drake, M. A. (2000). “Technological innovation and organizational change revisited.” Journal of Academic Librarianship **26**(1): 53-59.

This article examines how technology changes have driven organizational change in libraries. Technological changes have been the primary drivers in the ways that people work, seek information, communicate and entertain themselves. Books, articles, videos and other content are becoming more available electronically. This availability drives libraries to change the way they deliver product to their customers. Librarians are now required to have skills in new technologies. Also, they are required to have a better understanding of such things as copyright law.

Research for this article is based on a review of published literature.

This article is relative to my work because it explores how members of an organization are required to assume new roles and gain new competencies as their work is changed by the introduction of new technologies.

Gupta, A. (2000). “Enterprise resource planning: the emerging organizational value systems.” Industrial Management & Data Systems **100**(3): 114-118.

Enterprise resource planning is a set of applications that automate and link business functions such as finance, human resource, order processing, and production scheduling. This paper attempts to provide an overview of an ERP system along with the experience of its implementation. The paper also includes the results of a survey of ERP companies and looks at future trends in ERP. The author suggests some challenges for ERP, such as the need to ensure global compatibility and flexibility.

The article stated that several ERP companies were surveyed to assess implementation issues.

Unfortunately, specific sampling and demographic details were not disclosed.

This survey is relevant because ERP system implementations are often used as drivers for organization change in companies.

Johnson, B. and W. Woolfolk (1999). “Counterintuitive management of information technology.” Business Horizons **42**(2): 29-36.

This article assumes that the past three decades of information technology management has been flawed and has produced an environment of inflexible systems that are too costly and do not meet business expectations. It makes note that, despite IT's focus on systems development, systems maintenance is the larger item in the budget. It discusses attributes of flexible systems that allow for job redefinition and seamless data sharing. It also discusses several common IT myths.

The research for this article came from previously published works as well as the experience of the authors who are professors and consultants.

This article is relevant to my study because it takes a counter opinion to most of the writings I have

found on the subject of technology adoption and its effect on organizations.

Kemelgor, B. H. (2000). “Forces driving organizational change: A business school perspective.” Journal of Education for Business **75**(3): 133-137.

In this article, deans of business schools rated the importance of factors that drive organizational change. They looked at technology, competition, and factors specific to the workplace or industry. Specific items of importance included student recruitment, multimedia classrooms, and instruction through the internet. Accredited and non-accredited institutions were compared as well as public and private institutions.

A survey was done 0f 667 business schools in the United States. There were 311 usable responses for a response rate of 46.45. Of the business schools sampled, 61% were publicly supported, and 39% were private.

The research was relative in that it addressed the organizational changes that occurred to implement changes necessary to address training and reengineering efforts necessary to support new job

requirements resulting from technology implementations.

Kouzmin, A., N. Korac-Kakabadse, et al. (1999). “Globalization and information technology: vanishing social contracts, the "pink collar" workforce and public policy challenges.” Women in Management Review **14**(6): 230-252.

This paper critically examines the influence of information technology (IT) on women’s career structures. Globalization is forcing an increasing inter-dependence of radically re-engineered labour forces and the further “internal” exploitation of the internationalization of the dual labour market many women have endured. This trend is creating an increasingly marginalized, part-time, “pink collar” labour force. The article asserts that the new jobs created by IT are lower paying and low quality in nature.

This article is based on published works, and the experience of the authors. The nature of this article's subject would have lent itself to a more statistical study.

This article is relevant to my work because it examines the effect of the introduction of IT on the

female segment of society. It also has a global perspective.

Lassila, K. S. (1999). “Adoption and utilization of commercial software packages: Exploring utilization equilibria, transitions, triggers, and tracks.” Journal of Management Information Systems **16**(2): 63-90.

This article examines the fact that researchers and managers are beginning to realize that the full advantages of information technologies are not likely to be realized unless both the information technology and the organizational context are adapted during implementation. This highlights the importance of understanding and managing the relationship between information technology and organizational change. Managers and users can enhance and prolong the useful life of software packages by paying careful attention to implementation efforts that heavily influence initial utilization equilibrium, identifying periods of equilibrium and transition, and managing the internal and external change triggers that influence transitions between equilibrium states.

The research for this article was gathered by using a random sample of ten companies, of which eight

participated. Twenty-one individuals were interviewed. This was a truly scientific study using good research techniques.

This article is relevant to my work because it provides good, credible data from primary research.

Lipset, S. M. and M. R. Ray (1996). “Technology, work, and social change.” Journal of Labor Research **17**(4): 613-627.

This article examines the impact of technological advancement on the world of work and the subsequent effect on leisure, education and social stratification of America. Devolution of mass production; Growth of alternative types of employment in response trends in the labor market; Instability and strain on numerous aspects of society.

The authors' research is based on previously published material which included government census statistics.

This research is relative to my study because it addresses the way the introduction of technology has changed aspects of society. It also addresses how work, home, and leisure changes have affected each other.

Lundberg, D. J. (2000). “Integrating on-line technology into counseling curricula: Emerging humanistic factors.” Journal of Humanistic Counseling Education & Development **38**(3): 142-152.

This article examines how the emergence and widespread use of on-line communication is producing a strong reaction in the counseling profession. This article examines the integration of on-line technology into an introductory graduate counseling course and lays a foundation for examining human and humanistic factors inherent in this new technology. The article studies the effect of improving students' computer proficiency.

The research for this article is based on published works. It also assesses the results of the course modification made in a graduate counseling course. The results of the modification were observed, but not in a scientific manner.

This article is relevant to my work because of its study of integrating computer technology into an area that has traditionally not used this technology on the past.

Meredith, S. and D. Francis (2000). “Journey towards agility: the agile wheel explored.” The TQM Magazine **12**(2): 137-143.

This article describes how having a competitive advantage increasingly rests upon a capability to compete successfully in an environment of frequent, challenging and, often, unpredictable change. Sustaining competitive advantage through price alone is not a viable strategy for most firms. Firms need to succeed in markets where a range of advantages are expected by customers. Increasing global and local competition mean that companies unable to respond to customer demands are unlikely to survive. Deployment of the principles and practices of agile enterprise is a solution. This paper, based upon preliminary findings of the Agile Manufacturing Research Group (AMRG), discusses these issues and, through the introduction of the agile wheel reference model (AWRM), identifies the specific policies and practices that support agility.

The data for this article was gathered from published literature and visits to ten companies. Sixteen dimensions were identified.

This article is relative to my work because it addresses the business case for implementing technology to maintain a competitive advantage.

Organizational And Technological Change

A major issue in the implementation of new technologies at corporations is how the changes to organizations are identified and executed. Over the past few years, corporations have implemented new enterprise-wide software systems to improve business efficiencies and give themselves competitive advantages over their competitors. The growing popularity of the internet and its business potential have fueled this rush for businesses to increase their ability to do electronic commerce.

As computers perform more tasks in an organization, the need to change the structure of the organization grows. Some departments expand while others are eliminated. Human resources may be eliminated or reassigned. People may be required to change their home environment as the workplace moves to a more virtual model. Changes in business processes often require additional education to allow people to gain new skill sets.

Technology implementers recognize the need to manage these organizational changes. They also recognize that the changes extend beyond the workplace affecting other areas of society. Failure to effectively manage these changes

often results in a less-than-expected return on the technology investment. In the worst cases, the implementation of technology can have a detrimental effect on the business. Hank Bromley (1997) says “Understanding the role of technology requires a nuanced, flexible study, one that does several different things at once, and balances them in ways that cannot be specified in advance” (Brightman & W., 1999, P. 65).

Many technology consultants now include organizational change components to their implementation plans. Specialists are brought into the projects at the beginning to help identify the change effort required and lead that part of the implementation project. These specialists work with the members of the organization to explain the changes and why they are necessary. They help the company and its people work through the cultural barriers to change and deal with the adverse effects to it (Goodwin, 2001).

Max Weber studied how societies and businesses changed with the growth of capitalism. In his theme of rationalization, he described how economic values brought forth a form of calculation in human activity that was more precise than traditional methods of social measurement. This rationalization led to the development of calculable law and the development of that part of the legal system

that pertains to commercial activity. The gain spirit that evolved from these developments changed the way economic and religious aspects of society related to each other. These changes in that relationship shaped the way societies evolved. This evolution continues as technological advances bring commerce and the workplace into people's homes. It continues in business organizations as corporate cultures are called into question just as religious traditions were during the industrial revolution (Weber, 1922/1961).

A Historical Review Of Technology And Social Change

Technology has always been a part of human civilization and has had a role in its evolution. The wheel, spear, cooking, and every other advancement that has allowed humans to improve their condition are all examples of technology. Each advancement has allowed the society in which it was developed to achieve things that it was not able to achieve before (Temporary National Economic Committee (TNEC), 1999). A report by the Temporary National Economic Committee states:

> Technology refers to the use of physical things to attain results which human hands and bodies unaided are incapable of achieving. In this sense, technology

> reaches back to the beginnings of human culture, has always played a highly significant role in social evolution and will remain a mainstay of civilization (TNEC, 1999, p. 138).

To this point, technological advances are part of the natural development of humans and their societies. Advances in knowledge and technical understanding lead to the production and application of new technology which then causes changes in society (Norman, 1981). Collin Norman describes it this way:

> Technology development, according to this view, is an evolutionary process, not unlike biological evolution. We even speak of new generations of computers, automobiles, and other high-technology goods as if they were biological descendents of earlier models, and key technical developments are often regarded as the progenitors of a whole range of subsequent innovations (Norman, 1981, p. 20)

Historically, many social changes have been determined by technology. The introduction of technology changes the way society functions. “This concept lies unstated behind such terms as the Bronze Age, the Machine Age, and the Computer Age” (Norman, 1981, p. 20).

Looking at the evolution of technology and idea that social change follows technological advancements, one can draw correlations between the development of agricultural technology and the rise of the cities in Sumeria as the land was able support more people. The development of steam power made the machines of the industrial revolution possible (Norman, 1981).

Like biological evolution, technical evolution is either nurtured or defeated by the forces surrounding it. The ancient Greeks actually invented steam power (Norman, 1981). Norman observes that:

> Technical evolution, like biological evolution, responds to a variety of forces. Biological evolution is driven by environmental pressures that favor the survivability of some species over others-insects resistant to an insecticide will swiftly predominate in a sprayed area, for example-and the key to the development of living things can be found only by looking at them in relation to their environment. Similarly, the key to technological development lies in the environment in which technological change takes place-in this case, the social, economic, political, and physical environment (Norman, 1981, p. 21).

Corporations dominate the development of technology in the western industrialized countries and in Japan. This commercial thrust guides much of the pace and direction of technological development (Norman, 1981). One can distinguish between capitalism and technology, but the two have been closely associated during the time of their shared history. Capitalists funded the development and deployment of technology to enhance income and profit (TNEC, 1999). The Temporary National Economic Committee noted that”

> There was a conflict of interest between the two at times, but since the capitalist was the partner with the controlling resources, his will in the long run had the right-of-way (TNEC, 1999, p. 138).

Social change, as the result of technological advancements, is not always in the best interest of everyone affected. Especially in the above-mentioned example, the capitalist steers the advancement in the most profitable direction. To examine another, more macro environment, as the British established new towns to deal with population migration in areas where intervention by others was limited (Hill, 1997). Michael Hill makes this observation about British societal development:

> The new towns are examples of successful British innovations of this kind. What is interesting about them is that, while the development corporations acquired powers that gave them a great deal of autonomy within their own territories, there is today a variety of questions to be raised about the extent to which their success was secured at the expense of other policies to which they ought to have related. While the new towns often built up relatively successful, prosperous new communities, they did little to relieve the problems of the least privileged old communities from which they drew; hence, while they have helped to solve some inner-city problems, by providing for ‘overspill’, they have exacerbated others (Hill, 1997, p. 92).

As with any change agent, the affect of the introduction of technology on a society is more dependent on that society’s current environment and its willingness to nurture the change brought on by the technology. The technology itself is primarily dependent on the social and economic forces that control it. The Temporary National Economic Committee wrote the following about technological neutrality:

> Technology is relatively neutral; the more dynamic forces lie within the economic system that controls

> it. If this system is socially wholesome, its employment of technology will be socially advantageous; if it is less than this, its influence will be uneven-rendering benefits here, disadvantages there, as the prevailing cluster of conflicting economic forces may decide (TNEC, 1999, p. 139).

The capitalistic thrust behind the development of technology and the profit-maximizing agenda contained therein often meets with resistance from the labor force in which the technology is being implemented. Labor feels threatened by the implementation of technology that enhances efficiency. Norman observed the following correlation between technology and labor:

> In other words, production technologies not only combine energy and raw materials in the manufacture of goods, but they also provide the means by which labor forces are rationalized and controlled (Norman, 1981, p. 23).

The Temporary National Economic Committee seemed to echo this when it wrote:

> Americans struggled in the depression years to understand the painful mystery of widespread unemployment. Many blamed technology for displacing workers (TNEC, 1999, p. 137).

U.S. census information shows, however, that eighteen new industries created since 1879 absorbed almost one-seventh of all labor employed in manufacturing in 1929. These industries included such new technologies as electrical machinery, motor vehicles, gasoline, manufactured ice, refrigerators, phonographs and fountain pens (Committee, 1999). These new jobs did, however require new worker skills than the ones they replaced.

To examine the effect of technology on societies, a study of nine countries was done to examine technological growth between 1900 and 1964. The study found that:

> The technical status of the world as a whole advances at a roughly constant exponential rate, doubling every twenty years, or in effect, every generation (Gordon & Shef, 1999, p. 279).

Countries are divided between those that are technologically advanced and those that are underdeveloped. Although there is a wide variance between the technical levels of these two groups, their growth rates are consistent (Gordon & Shef, 1999).

The study's authors also examined what factors might limit technological growth. In terms of the current state of technology, growth would be limited when:

1. When societies know how to do all things.

2. When societies lose interest in the reinvestment process.
3. When societies become nontechnological-like the porpoise, intelligent but without machines (Gordon & Shef, 1999).

The authors also examined other limiting factors that could arise in the future.

1. Combined technological and social advancement of a society brings social ills that sometimes require even more technology for their cure.
2. When the technological growth curve progresses to the point that all further technological advancement is devoted to the maintenance of the status quo (Gordon & Shef, 1999).

Catastrophic events such as war could halt or cause technological regression by destroying the minds and media that hold information. An example of this is how the burning of the library of Alexandria destroyed much of the written history of early civilization (Gordon & Shef, 1999).

Sometimes the introduction of technology does not yield the expected results. Given the capitalistic force behind many technological implementations, the ultimate goal of the project is to improve productivity and/or

reduce cost. Stakeholders analyze facts to predict outcomes and set expectations. Even though predictive analysis is done prior to implementation, external factors can cause unpredictable results or adverse side effects in other areas. One example involves the introduction of tractors to farmers in Pakistan.

In the late sixties, the government of Pakistan secured a loan for $43 million from the World Bank to import 18,000 large tractors. Large landowners were given the opportunity to purchase these tractors on very attractive credit terms. The farmers who purchased these tractors were able to increase their production as well as their incomes. A study in the early seventies revealed some unexpected results (Norman, 1981).

The powerful tractors allowed the farmers to cultivate larger areas than the oxen they had used before. This allowed the average farmer to double the size of their farm. This forced many small farmers off their land, and reduced the amount of labor hired by the large farmers. It was found that each tractor resulted in the loss of five jobs. The tractors were introduced to increase agricultural production, but in actuality the tractors were found to have no effect on crop yields or on the number of crops grown. It was found that the distribution of the

benefits from this program had been biased in a way that was actually socially regressive due to the loss of jobs, the loss of land by small farmers, and the lack of increased crop production (Norman, 1981).

Because of the ties that technology advancements have to industrialization, scholars often attack the problem of social change in underdeveloped countries in terms of the idea of technological development. Industrialization and technical development are not the same thing. Many technical developments, such as the wheel, the canoe, and the building of ponds are not directly related to industrialization. Many scholars regard industrialization as one form of technical development. It is important to address technology and industrialization separately when looking at social change. The introduction of an industrial system may involve new equipment and methods as technical innovations, but industrialization may introduce new practices to society that are not technical (Blumer, Maines, & Morrione, 1990). Herbert Blumer describes it in this way:

> Industrialization may bring a rich variety of practices that in careful use of terms would not be regarded as technological, such as the use of female labor, the over employment of workers, the recruitment

> of an alien managerial class, a given system of factory discipline, minimum wage legislation, the organization of workers, a sales force, and the development of loan associations (Blumer, et al., 1990, P. 19).

The concept of industrialization as technical development is useful in tracing the history of how manufacturing has developed, since the manufacturing sector is constantly looking to improve efficiencies. It does not, however help in the study of how the development of manufacturing systems affects group life (Blumer, et al., 1990).

Trends In Information Technology And Social Change

J.C.R. Licklider commissioned research for the U.S. Defense Department that led to the internet. In his 1968 report he described an environment of telecommunications that would allow people to work at computer terminals and share information. His prediction said:

> When people do their informational work at the console and through the network, telecommunication will be as natural an extension of individual work as face-to-face communication is now. The impact of that fact, and of the marked facilitation of the communication

> process, will be very great - both on the individual and on society (Licklider, 1999, p. 277).

Today, computers touch most aspects of people's work lives. Personal computers at desktops are networked with each other and departmental computers. These departmental computers are networked with large corporate computers. These chains of corporate computing power are linked to the internet where they are networked with computers from other companies and those in the homes of individuals. Business transactions, electronic mail, and personal entertainment all flow through the world-wide web of the internet. This change has happened quickly over the past ten or so years. Technology is one of the major drivers of change in the ways that people work, seek information, communicate and entertain themselves (Drake, 2000).

The work place has been greatly affected by this technical change. This change has caused a ripple effect into the home life of employees. More people are working away from their offices. Many work at home. A 1995 survey showed that 18 percent of Americans work at home one or two days per week, and 40 percent work at home one or two days per week if they have online computer access (Lipset & Ray, 1996).

This change in the workplace and the global systems access has led to organizational restructuring. One fallout of this IT-based reengineering has allowed companies to restructure and focus on core business functions with small essential staffs and activities. Companies are adopting processes which emphasize international coordination. Technology has changed the context of workplace relationships and made them more virtual with less physical contact (Kouzmin, Korac-Kakabadse, & Korac-Kakabadse, 1999). Online capabilities greatly expand computer usage into actual interpersonal interaction (Lundberg, 2000). However, in some cases this lack of personal interaction has distorted human perceptions and produced a transparency of individual contributions to the organization (Kouzmin, et al., 1999).

This ability to work from home is dependent on employers implementing computer systems and business processes that facilitate it. One of the ways that companies accomplish this change is by implementing an Enterprise Resource Planning (ERP) system.

The currently, 69 percent of the ERP software market belongs to five vendors. They are SAP, Oracle, PeopleSoft, Baan, and J.D. Edwards. These companies saw a 61 percent

growth rate in 1999, and predictions are that growth will continue (Chung & Snyder, 2000).

ERP systems allow companies to integrate various pieces of departmental information within their business computer systems. This information can then be made available through telecommunications to virtually anywhere in the world. Home access is actually a byproduct of this electronic integration. The promise of ERP implementations is the efficiencies derived from this integration (Gupta, 2000).

Almost all computer application systems are data acquisition, storage, manipulation and display tools. In older systems, the tools used by the various functional areas of a company are not integrated. An ERP system does the same thing as these traditional systems except that the tables containing the many data elements are linked together. Business transactions that use cross-departmental data are able to access that data through the use of these linked tables. As a result, the information is not confined by functional or departmental boundaries. The same data elements can be used by different people for different functions regardless of their physical location or discipline (Gupta, 2000).

Early forms of ERP software were only available to large companies. Advancements in information technology and the drastic reduction in computer prices have made ERP systems a possibility for even small companies (Gupta, 2000).

As companies wrestle with ERP software choices and implementation plans, they must consider the organization of the business. Departmental boundaries as well as global ones need to be taken into consideration. Employees, accustomed to existing organizational structure and job responsibilities are often resistant to change. A survey by ERP companies that identified issues related to ERP systems found that:

> The main hurdle faced by all companies was resistance to change. Employees were reluctant to learn new techniques or the Information Technology (IT) department was reluctant to change due to attachment to its product; this was one of the main hurdles faced during the ERP implementations (Gupta, 2000, p. 116).

Associated with the change issue is the subject of training. The survey also found that “One problem that is common to all implementations is poor end user training” (Gupta, 2000, p. 116).

ERP systems implementations are often part of a broader Business Process Reengineering (BPR) initiative. Many companies have used BPR projects to dramatically improve business performance. IT and ERP systems are often regarded as the enablers for BPR. However, many companies are not able to achieve their goals. It is estimated that as many as 70 percent of reengineering projects fail. In some failures, the IT organization is viewed as an obstacle to innovation. In others, internal organizational problems are seen as the reason for failure (Chan & Land, 1999).

An article in the Business Process Management Journal describes organizational change as a learning process:

> Change within the organization is a learning process, lined with unexpected obstacles along the way. As managers plan for change, their strategy must take into account the interactions among all of the business system components. Management's goal should be to minimize the uncertainty through understanding the importance of IT in facilitating process change (Chan & Land, 1999, p. 112).

This management involvement is essential in dealing with corporate cultural issues. Brightman and Moran (1999) advocate building organizational citizenship to foster voluntary, consistent commitment to the goals of the

company. This is done by viewing the organization as a country and creating a culture of patriotism throughout the organization (Brightman & W., 1999).

Corporate culture and strategy can have a direct impact on the success of BRP efforts because of its direct effect on the IT organization. Top executive involvement must be maintained to keep the organization receptive to change. The Business Process Management Journal states:

> A lack of organization receptiveness to change will lead to a project not being completed on time or can even lead to a project's failure. Without a constant project enthusiasm from the high corporate ranks, skepticism and resistance will grow throughout the organization (Chan & Land, 1999, P. 112).

In general, this is the basic difference between the terms Business Process Reengineering (BPR) and Business Process Improvement (BPI). Both relate to process improvement and customer focus. BPR is usually considered a top-down method of implementing changes, while BPI is a bottom-up approach. In BPR, workgroup roles are standardized and driven from top management. In BPI, changes are initiated from the employees (Bhatt, 2000).

One way to prevent mass opposition to a reengineering project is to understand the internal workings of the

organization. This understanding can minimize the effects of corporate culture on the initiative. Organizations fit into one of two types: introverted or extroverted. Introverted corporations place a higher emphasis on top management control. Extroverted companies view IT as a tool to improve revenue and customer satisfaction. Studies suggest that extroverted companies are better candidates for reengineering provided that do not fall victim to information overload by implementing systems that are too complex and costly to maintain (Chan & Land, 1999).

A study in the Journal of Management Information Systems (1999) suggests that the full potential of information technologies, in particular commercial software packages, are not likely to be realized unless both the information technology and the organizational context are addressed in the software implementation project. It is important to manage the relationship between information technology and organizational change (Lassila, 1999). The article states that:

> Underutilization and nonuse of information technology, especially software, frequently results in failure to meet objectives and frustration on the part of senior managers. This may be true even when the technology is functioning exactly as planned. Research has shown

> that, regardless of the features available, users mediate software impacts through avoidance, resistance, or adaptation (Lassila, 1999, P. 64).

The article references the punctuated equilibrium model which describes organizational change as consisting of long periods of stable infrastructure interrupted by brief periods of revolutionary change. Three distinct features of the punctuated equilibrium are:

1. Deep structure; the set of fundamental choices an organization is made up of. These are the basic parts into which an organization is segmented and the activity patterns within these segmentations.
2. Equilibrium periods; the stability in the organization's structure and activity patterns. Equilibrium consists of maintaining the deep structure. Equilibrium periods are maintained by awareness, motivation, and obligation. As long as an organization's deep structure is intact, it is difficult to change.
3. Revolutionary periods; the major upheaval and reformation of deep structure. For significant change to occur, the deep structure must be dismantled, leaving the organization temporarily disorganized. This period includes a

reconfiguration of the organization with a new set of rules (Lassila, 1999).

In successful cases, the initial implementation of technology signals the beginning of a revolutionary period which concludes when the new business processes and technology are mutually adapted within the organizational structure of the company. These adaptations can result in a stable, routine utilization of the new technology and denote the return of an equilibrium period. This is characterized by the utilization of technology in support of the deep structure within the organization. The outcome of the revolutionary period is a new equilibrium state (Lassila, 1999).

A fundamental problem in many organizations is that too few people are involved in recognizing and implementing change (Kemelgor, 2000). Some organizations rely on large-group interaction methods (LGIMs) to involve large numbers of people in planning and implementing major change efforts. These methods are structured processes for engaging large numbers of people to:

1. Build commitment to problem definitions and solutions
2. Enhance the amount of relevant information assembled about a problem

3. Fuse planning and implementation
4. Shorten the amount of time needed to conceive and execute major policies and projects (Bryson, 2000).

There are seven major LGIMs methods currently in use in organizations. These are; Real Time Strategic Change, Search Conferences, Future Searches, Strategic Options Development and Analysis, Strategic Choice, Technology of Participation, and Open Space Technology (Bryson, 2000).

An opposing point of view is offered in an article in Business Horizons (1999). It reports that the success rate for technology development projects is 9 percent with a 31 percent cancellation rate. The article asserts that these consistently poor results from business automation systems indicate flaws in the underlying assumptions about technology implementations. In reference to the above mentioned statistics, the authors state, “For the projects alluded to above, undertaken to implement business changes, the systems themselves underlie the failures by resisting change” (Johnson & Woolfolk, 1999, P. 29). They propose a new set of assumptions centered around built-in flexibility that no longer perpetuate IT systems that impede change.

The authors go on to describe the relationship with the real world and what they call the artifact world. The artifact world is the modeling of the physical state in the

system's software. For the systems to function properly, the artifact must mirror reality. The authors describe the necessity for total flexibility by saying that, "Real world systems must change or they will die. However, most artifact systems are so brittle that, when modified, they die anyway, unless costly life-support measures are taken" (Johnson & Woolfolk, 1999, P. 29). This theory is supported by the concepts contained in the Agile Wheel Reference Model (AWRM). This wheel is a tool to determine the agility of an organization. The theory is based on the idea that structure and processes stifle a company's agility and capacity to react to rapidly changing market conditions (Meredith & Francis, 2000). This approach facilitates the implementation of technology with minimal impact on organizational structure and eliminates the need for organizational change.

Conclusion

Companies introduce new technologies to give themselves a competitive advantage. Technology often represents more efficient and accurate ways of performing business tasks, especially in the industrial sector. This explains the capitalistic force behind much of the new technology that is developed.

The introduction of technology is often plagued by problems. Unexpected social changes can sometimes have a negative effect on the societies in which technology is introduced. Changes in the workplace spill over into home and community life. The intrusion of the workplace into the home, the displacement of workers by new tools and methods, and the tradeoffs between the comfort of the status quo and the turmoil associated with technology implementations all take a toll on the people and societies in which they occur.

The implementation of information technology can improve operational efficiencies in a company and give it a competitive advantage. The move to such technologies has proven to be disruptive to the business in terms of financial performance and the organization of its people. Both of these disruptions introduce a level of business risk. To minimize this risk, The organizational change aspects of these implementations is beginning to be addressed as part of technology implementation projects.

ERP systems represent a large segment of the new technologies being introduced in large corporations. The implementations of these software packages often require major changes in business processes and organizational

structures. In some cases these technologies become the driving force behind business process reengineering.

Some studies dispute the idea of changing business processes to implement technology. Those who subscribe to this school of thought believe that software should be adapted to current business processes and that flexibility should be required more of the technology than the organization.

Organizational change efforts add cost to a technology implementation. In some cases, not doing organizational change has been very costly, also. Additional research should be done to address the question of the effectiveness of organizational change efforts in a technology implementation project.

With the number of ERP implementations that have occurred over the past few years, there should be enough examples of varying levels of organizational change efforts from company to company. A study of the level of organizational change effort and the attainment of expected outcomes of technology implementations could be done. Measurements of financial performance, before and after the implementations, and the organizational change budgets along with departmental headcount changes would be one way

of assessing the relationship between project performance and organizational change.

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Professional Practice and Organizational Change

A Study Of Information Technology Implementations And Organizational Change Methods

Walden University

Mark T. Luckett

Ph.D. in Applied Management and Decision Science

Organizational Change Management

First Assessor: Dr. Marcia Steinhouer

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August, 2001

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Introduction

Max Weber studied how societies change with the growth of capitalism. Industrialization, along with its associated technology changed work, home, religious and communal relationships in western civilization. These changes caused people to change traditional behavior, much of which was rooted in religious beliefs (Weber, 1922/1961).

Corporate cultures and work relationships are, in a way analogous to these communal and religious traditions. The introduction of new technology in these social environments can cause changes in long standing corporate cultures and belief systems.

The introduction of technology often drives change in society. Left unmanaged, these changes can have an adverse effect on the members of the society in which the change is introduced.

The capitalistic thrust behind the development and implementation of technology steers it toward endeavors that will improve financial performance through efficiency and product improvements. To be successful, the new users of technology must have a good understanding of how to use

it and how it affects the surrounding people and products it touches.

The introduction of tractors in Pakistan in the late sixties was supposed to improve farm output and boost local economies. The opposite actually occurred. Farm output was unchanged and thousands of people lost their land and their jobs. This had a negative impact on the society as a whole (Norman, 1981).

There are reports of how the introduction of new information technologies have had unexpected negative impacts on the companies that implemented them. Owens Corning, a manufacturer of building supplies, experienced a variety of problems when they implemented a new Enterprise Resource Planning (ERP) system (Chan & Land, 1999). Hershey Foods issued profit warnings in 1999 because of distribution problems associated with an ERP system implementation (Wheatley, 2000). Whirlpool, an appliance manufacturer saw its share price drop from $70 to $60 due to its ERP system implementation problems (Wheatley, 2000). Dana Corporation, and auto parts manufacturer blamed new warehouse management software, in part, for not meeting financial expectations (Dana, 2000).

Many of the failures cited are, in part, due to a lack of understanding of the new technology and how to use it.

Some are due to technical problems that have more to do with low quality software and hardware. This report will focus on the first scenario.

Purpose

Companies must manage and contain the business risks associated with the implementation of new technologies. New order-entry systems that fail prevent companies from taking orders from their customers. Billing systems that fail prevent companies from invoicing customers for goods sold to them. ERP systems include these and many other mission-critical business functions that are tightly linked together to form a complete, real-time, integrated system (Gupta, 2000). The failure of any one of these components can have a devastating ripple effect on the operation of the rest of the system and the business using it.

The implementation of these ERP systems is a massive undertaking for most companies. Computer hardware and software must be purchased and installed. Training programs must be designed and executed. Legacy data must be converted. Business processes must change. These efforts drain resources from an organization. Both money and people must be allocated to the project. A company's people are often supplemented by consultants that are

brought in to provide knowledge about the new system, implementation project management expertise, and change management methodologies (Portik, 2001).

Many corporations fail to establish adequate change management budgets when they implement ERP systems. This often results in poor system performance and, in the worst cases, negatively impacts the company's financial results. Stephen Portik, of Price Waterhouse Coopers says:

> Many organizations commonly make two fundamental errors when considering the implementation of new information technology tools. First, they look at the project as a tools project only. In reality the project must be approached with a clear understanding of the information required, the process impacted and the necessary organization structure. Only when these elements have been determined and processes to manage the resulting change developed can an effective tool be selected that will support these elements. The second error that is made is that an organization will consider the information technology project complete once the "switch is thrown" and the tool is placed into production. In fact the implementation process can extent up to a year or more as the organization comes to grips with the actuality of the resulting change.

> A robust change management process must be in place to aggressively address the inevitable additional training requirements, user resistance and process gaps that occur. People's perception of any new tool, and the success of its driving initiative, will be judged on how well the change management process is managed after "go-live" (Portik, 2001).

Change management efforts include many activities. Users must be trained on how to use the new technology tools. Functional education may be needed to give users the prerequisite functional knowledge to understand the principles upon which the new tools are based (Gupta, 2000). Organizations must be changed as roles and responsibilities are redefined by new business processes (Bhatt, 2000), (Chan & Land, 1999). These organizational changes may include the shifting of human resources from one department to another, the elimination of employees, and the creation of completely new job functions.

The purpose of this research is to identify companies that have implemented new ERP systems and study the results of these implementations. The achievement of expected results will be compared to the existence of change

management efforts in the individual system implementation project.

Method

The question being researched is:

> Do increased change management activities in an ERP system implementation increase the level to which the ERP system meets the expectations of the business?

Hypothesis:

> H0: Change Management does not affect the level to which ERP systems will meet business expectations.
>
> H1: Change management increases the level to which ERP systems will meet business expectations.

Method

Twenty three locations of an US based Fortune 500 company that had implemented ERP systems were identified. Telephone interviews of the IT managers for these locations were conducted to identify appropriate survey questions. The managers were able to measure the effectiveness of the implementations by examining standard business reporting numbers for inventory, headcount, order fill, and overall operational efficiencies. Change management levels

differed based on the complexity of the location being implemented. Unfortunately, separate budgets were not kept for the change management efforts in the projects, so the level could not be accurately measured. The study, therefore only asks if change management efforts were performed.

A web-based survey was conducted among these twenty three locations using a software tool called 2-Way. This software package allows the user to conduct an anonymous survey over the internet. The results are recorded in a secured central database. Of the twenty three locations surveyed, nineteen responded for a response rate of 82.6%. The survey contained questions designed to measure change management activity, implementation complexity in terms of number of locations and users, and the degree to which the resulting benefits of the implementation met the initial expectations of the company. To establish the complexity of the implementation, the survey asked for the number of individual system users at each location. To ensure that the organization being surveyed had a working, production system in place, the survey asked how many months the system had been running in a production environment. The next set of questions established the degree to which business performance improvement expectations had been met.

The survey also establishes the level of the management support the implementation project had. Appendix 1 contains the survey.

Results

Table 1 contains the individual results for the survey. The first test analysis was done to determine the statistical significance of the descriptive variable change management on the dependent variables. A one-way anova table was used to do this test. Using a standard distribution of data, a significance factor of .05 or less is deemed significant for a given comparison of variables. Table 2 contains the results of these tests using the software package SPSS to do the calculations. For those variables that were deemed statistically significant, descriptive statistics were calculated giving mean, and standard deviation. Table 3 contains the results of these calculations.

The descriptive variable change management was compared to the six dependent variables. On-time project completion showed a significance of .049, which demonstrates significance. On-budget project completion showed a significance of .918, which demonstrates low significance. Head count objectives showed a significance

of .641, which indicates low significance. Inventory objectives showed a significance of .077, which is insignificant. Customer order fill objectives showed significance with a measure of .001. Operational efficiency objectives also showed significance at .001.

The descriptive variable Management support was compared to the six dependent variables. On-time project completion showed a significance of .642, which demonstrates low relative significance. On-budget project completion showed a significance of .034, which demonstrates significance. Head count objectives showed a significance of .003, which indicates significance. Inventory objectives showed a significance of .001, which is significant. Customer order fill objectives showed no significance with a measure of .153. Operational efficiency objectives also showed significance at .025.

The descriptive variable of months in production was compared to the six dependent variables. None of the variables showed significance to this independent variable.

The descriptive variable of implementation team size was compared to the six dependent variables. On-time project completion was insignificant with a factor of .185.

Inventory objectives showed a significance of .019, which is significant. Customer order fill objectives showed significance with a measure of .001. Operational efficiency objectives showed significance at .001.

The descriptive variable number of users was compared to the six dependent variables. On-time project completion showed a significance of .118, which demonstrates insignificance. On-budget project completion showed a significance of .579, which demonstrates low significance. Head count objectives showed a significance of .109, which indicates low significance. Inventory objectives showed a significance of .007, which is significant. Customer order fill objectives showed significance with a measure of .001. Operational efficiency objectives also showed significance at .001.

For the purposes of this paper, the secondary analysis was restricted to the change management variable. All other results are, however reported in the tables.

Secondary analysis was done on the variable change-management. Fourteen of nineteen locations had change management activities associated with their implementation projects. Of those that had change management activities, the mean for meeting headcount objectives was 3.21 with a standard deviation of .43. The mean for those without

change management was 3.4 with a standard deviation of 1.34. Of those that had change management, the mean for meeting order-fill objectives was 4.07 with a standard deviation of .27. For those that did not have change management, the order fill mean was 2.2 with a standard deviation of 1.1. Of those that had change management, the inventory objectives were 4.43 with a standard deviation of .94. For those without change management, the inventory mean was 3.4 with a standard deviation of 1.34. For those that had change management, overall operational efficiencies were 4.57 with a standard deviation of .85. For those without change management, the efficiency mean was 2.6 with a standard deviation of 1.34.

Discussion And Conclusion

This paper focuses on the effect that organizational change management has on the implementation of technology in large corporations. The focus of study discussed here is the implementation of ERP systems.

The survey results indicate a strong correlation between ERP implementation projects that have change management activities and those that do not. On time and on budget completion of implementation projects seems to be unaffected by change management efforts, but measurable

business improvement objectives are. Based on these findings, hypothesis H1 is proved to be true.

Meeting headcount objectives was slightly better, statistically when looking at the mean response. However the standard deviation indicates that the results vary widely when change management activities are not included. For all other variables, inventory, order fill, and operational efficiency, the mean is significantly higher for those projects that included change management than for those that did not. In addition to this, the standard deviation was substantially lower indicating more consistent results in each area for those that used organizational change management techniques.

Based on current research and publications, organizational change management is a growing discipline in the field of technology implementation. Performing these activities in an implementation project increases the cost of the project as any additional scope would. It appears, from current reading and the research done in association with this paper, that organizational change efforts significantly improve an organizations ability to achieve business performance improvements from the implementation of ERP technology if organizational change is included in the implementation project. It is, therefore recommended

that these activities be included in technology implementations, especially ERP implementations.

Table 1

Individual Survey Results

Lo	Us	Mot Liv	Tm Siz	On Tim	On Bud	Chg Mgt	Mgmt Supt	Head Cnt	Inventory	Order Fill	Oper Effi
1	30	18	15	Yes	Yes	Yes	Agree	Agree	Agree	Agree	Agree
1	50	60	25	Yes	Yes	Yes	Agree	Agree	Strongly Agree	Strongly Agree	Strongly Agree
1	120	24	50	No	No	No	Disagree	Agree	Agree	Disagree	Disagree
1	100	30	45	No	No	No	Agree	Agree	Agree	Disagree	Agree
1	90	36	40	No	No	No	Disagree	Agree	Agree	Disagree	Disagree
1	70	24	20	Yes	Yes	No	Strongly Disagree	Strongly Disagree	Strongly Disagree	Strongly Disagree	Strongly Disagree
1	60	60	25	Yes	Yes	Yes	Agree	Agree	Disagree	Agree	Disagree
1	40	36	25	Yes	Yes	No	Strongly Agree	Agree	Agree	Agree	Agree
1	25	29	18	Yes	Yes	Yes	Strongly Disagree	Not Applicable	Not Applicable	Agree	Agree
1	25	28	18	Yes	Yes	Yes	Disagree	Not Applicable	Agree	Agree	Agree
1	141	26	17	Yes	Yes	Yes	Disagree	Not Applicable	Agree	Agree	Strongly Agree
1	30	27	12	Yes	No	Yes	Strongly Agree	Not Applicable	Strongly Agree	Agree	Strongly Agree
1	40	25	12	Yes	No	Yes	Strongly Agree	Not Applicable	Strongly Agree	Agree	Strongly Agree
1	50	23	12	Yes	No	Yes	Strongly Agree	Not Applicable	Strongly Agree	Agree	Strongly Agree
1	110	22	12	Yes	No	Yes	Strongly Agree	Not Applicable	Strongly Agree	Agree	Strongly Agree
1	30	22	12	Yes	No	Yes	Strongly Agree	Not Applicable	Strongly Agree	Agree	Strongly Agree
1	50	22	12	Yes	No	Yes	Strongly Agree	Not Applicable	Strongly Agree	Agree	Strongly Agree
1	30	19	12	No	No	Yes	Strongly Agree	Not Applicable	Strongly Agree	Agree	Strongly Agree
1	15	17	12	No	No	Yes	Strongly Agree	Not Applicable	Strongly Agree	Agree	Strongly Agree

Table 2

Independent Variable = Change Management

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
ONTIME	Between Groups	.770	1	.770	4.491	.049
	Within Groups	2.914	17	.171		
	Total	3.684	18			
ONBUDGET	Between Groups	3.008E-03	1	3.008E-03	.011	.918
	Within Groups	4.629	17	.272		
	Total	4.632	18			
HEADCNT	Between Groups	.127	1	.127	.226	.641
	Within Groups	9.557	17	.562		
	Total	9.684	18			
INVENTRY	Between Groups	3.898	1	3.898	3.557	.077
	Within Groups	18.629	17	1.096		
	Total	22.526	18			
ORDERFIL	Between Groups	12.903	1	12.903	38.291	.000
	Within Groups	5.729	17	.337		
	Total	18.632	18			
EFFICIEC	Between Groups	14.319	1	14.319	14.639	.001
	Within Groups	16.629	17	.978		
	Total	30.947	18			

Independent Variable = Management Support

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
ONTIME	Between Groups	.379	3	.126	.573	.642
	Within Groups	3.306	15	.220		
	Total	3.684	18			
ONBUDGET	Between Groups	1.993	3	.664	3.776	.034
	Within Groups	2.639	15	.176		
	Total	4.632	18			
HEADCNT	Between Groups	5.795	3	1.932	7.451	.003
	Within Groups	3.889	15	.259		
	Total	9.684	18			
INVENTRY	Between Groups	14.887	3	4.962	9.744	.001
	Within Groups	7.639	15	.509		
	Total	22.526	18			
ORDERFIL	Between Groups	5.382	3	1.794	2.031	.153
	Within Groups	13.250	15	.883		
	Total	18.632	18			
EFFICIEC	Between Groups	14.058	3	4.686	4.162	.025
	Within Groups	16.889	15	1.126		
	Total	30.947	18			

Independent Variable = Months In Production

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
ONTIME	Between Groups	2.684	13	.206	1.032	.528
	Within Groups	1.000	5	.200		
	Total	3.684	18			
ONBUDGET	Between Groups	3.632	13	.279	1.397	.377
	Within Groups	1.000	5	.200		
	Total	4.632	18			
HEADCNT	Between Groups	5.184	13	.399	.443	.890
	Within Groups	4.500	5	.900		
	Total	9.684	18			
INVENTRY	Between Groups	13.526	13	1.040	.578	.803
	Within Groups	9.000	5	1.800		
	Total	22.526	18			
ORDERFIL	Between Groups	15.632	13	1.202	2.004	.228
	Within Groups	3.000	5	.600		
	Total	18.632	18			
EFFICIEC	Between Groups	23.947	13	1.842	1.316	.406
	Within Groups	7.000	5	1.400		
	Total	30.947	18			

Independent Variable = Team Size

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
ONTIME	Between Groups	2.184	8	.273	1.820	.185
	Within Groups	1.500	10	.150		
	Total	3.684	18			
ONBUDGET	Between Groups	4.632	8	.579	.	.
	Within Groups	.000	10	.000		
	Total	4.632	18			
HEADCNT	Between Groups	9.684	8	1.211	.	.
	Within Groups	.000	10	.000		
	Total	9.684	18			
INVENTRY	Between Groups	17.360	8	2.170	4.200	.019
	Within Groups	5.167	10	.517		
	Total	22.526	18			
ORDERFIL	Between Groups	17.965	8	2.246	33.684	.000
	Within Groups	.667	10	6.667E-02		
	Total	18.632	18			
EFFICIEC	Between Groups	26.281	8	3.285	7.039	.003
	Within Groups	4.667	10	.467		
	Total	30.947	18			

Independent Variable = Number Of Users

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
ONTIME	Between Groups	2.934	11	.267	2.490	.118
	Within Groups	.750	7	.107		
	Total	3.684	18			
ONBUDGET	Between Groups	2.715	11	.247	.901	.579
	Within Groups	1.917	7	.274		
	Total	4.632	18			
HEADCNT	Between Groups	7.768	11	.706	2.579	.109
	Within Groups	1.917	7	.274		
	Total	9.684	18			
INVENTRY	Between Groups	20.776	11	1.889	7.555	.007
	Within Groups	1.750	7	.250		
	Total	22.526	18			
ORDERFIL	Between Groups	17.965	11	1.633	17.148	.001
	Within Groups	.667	7	9.524E-02		
	Total	18.632	18			
EFFICIEC	Between Groups	29.697	11	2.700	15.119	.001
	Within Groups	1.250	7	.179		
	Total	30.947	18			

Table 3

Descriptive Statistics For Significant Variables (Significance Equal To or Less Than .05)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ONTIME	19	1	2	1.26	.45
CHGMGMT	19	1	2	1.26	.45
MGMTSUP	19	1	5	3.74	1.52
HEADCNT	19	1	4	3.26	.73
INVENTRY	19	1	5	4.16	1.12
ORDERFIL	19	1	5	3.58	1.02
EFFICIEC	19	1	5	4.05	1.31
ONBUDGET	19	1	2	1.58	.51
Valid N (listwise)	19				

Descriptive Statistics For Gignificant Variables Significance Equal To Or Less Than .05 Change Management Equals No

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ONBUDGET	5	1	2	1.60	.55
HEADCNT	5	1	4	3.40	1.34
INVENTRY	5	1	4	3.40	1.34
ORDERFIL	5	1	4	2.20	1.10
EFFICIEC	5	1	4	2.60	1.34
Valid N (listwise)	5				

Descriptive Statistics For Significant Variables
Significance Equal To Or Less Than .05
Change Management Equals Yes

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ONBUDGET	14	1	2	1.57	.51
HEADCNT	14	3	4	3.21	.43
ORDERFIL	14	4	5	4.07	.27
INVENTRY	14	2	5	4.43	.94
EFFICIEC	14	2	5	4.57	.85
Valid N (listwise)	14				

Appendix 1

Survey

This survey is intended to be filled out by Information Technology Managers who's companies have implemented ERP systems over the past 5 years. It is confidential survey intended for use in a doctoral study of organizational change. If you would like the results of this survey, please send a e-mail request to mluckett@waldenu.edu.

How many locations were implemented?

How many users were given logon Ids to the system?

How many months has the system been in production?

How many people were on your implementation team?

Did your project complete on time?

Y N

Did your project complete on or below its budget?

Y N

Did your project include resources for organizational change management activities?

Y N

1. Strongly Disagree
2. Disagree
3. Not Applicable
4. Agree
5. Strongly Agree

1. Management showed strong visible support for the system implementation.

   1 2 3 4 5

2. Using the system, the company has been able to meet its objectives for headcount levels.

   1 2 3 4 5

3. Using the system, the company has been able to meet its objectives for inventory levels.

   1 2 3 4 5

4. Using the system, the company has been able to meet its objectives for customer order fill rates.

   1 2 3 4 5

5. Overall, the company has been able to improve operational efficiency using the system.

   1 2 3 4 5

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