Leadership Style and Perceived Benefits of Electronic Data Interchange for the Retail Industry

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LEADERSHIP STYLE AND PERCEIVED BENEFITS OF ELECTRONIC DATA INTERCHANGE FOR THE RETAIL INDUSTRY

By

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The purpose of this study was to determine if the leadership style of retail executives was related to the perceived benefits of electronic data interchange (EDI). Data for this study was collected online. Two previously validated instruments: The multi-factor leadership questionnaire and the technology acceptance scale were used to collect data. The 2002 International Counsel of Shopping Centers Advanced Registrants Directory was used to obtain 1,000 email addresses for this study sample. After a pre-notice was sent to each of the 1,000 email addresses, a total of 774 surveys were sent via email to retail executives from around the country who did not refuse to participate. A total of 90 surveys were completed and useable for a response rate of 13.18%. The leadership positions of the retail executives ranged from mid to top level. There was a positive and significant correlation between leadership style and the perceived benefits of EDI. A linear regression test was conducted and revealed that there was a significant relationship between transactional leadership and both dependant variables, which were EDI ease of use & usefulness.
In the retail industry, as in other large industries, the executives in leadership positions of an organization continually make decisions aimed at improving or maintaining the company’s performance through the use of new and innovative technologies (Deming, 1982; Taylor, 1911). It is also commonly understood that executives in management positions also make decisions aimed at meeting or exceeding organizational goals (Crosby, 1979). Even though the goals of leaders and managers in a company are similar, the literature frequently states that leadership, as opposed to management, is the key to an organization’s success or failure (Pijpers, Bemelmans, Heemstra & Montfort, 2001, Edelman, 1990; Sheldon, 1924). However, the concepts of leadership and management are sometimes used interchangeably by researchers who at times also admit that they are distinctly different (Bolman & Deal, 1989, Sheldon, 1924).

In order to reduce confusion, and develop a clear theoretical basis for this study, the differences between leadership and management will be discussed along with a review of leadership and management theories. This study will focus on two current and highly researched leadership styles, labeled transactional and transformational. Briefly, transactional leadership emphasizes an exchange of rewards for compliance, the clarification of goals, work standards, and task assignments. Transformational leadership is the process of influencing major changes in the attitudes and assumptions of organization members and building commitment for the organization’s mission or objectives (Yukl, 1994).

In the information age, virtually every retail organization is actively involved with the transmission of data from one point to another (Karakaya & Charlton, 2001). To accomplish this, retail organizations use various forms of information technology (see Table 1).
As seen in Table 1, electronic data interchange (EDI) is used throughout all the major functions of a retail organization, as are fax machines and email. All three of these technologies are electronic means of moving information from one place to another in a matter of seconds rather than days. EDI is a form of information technology that is used to improve an organization’s effectiveness and performance via the automation of routine tasks, and the accurate and secure transmission of business documents between organizations (Lankford & Johnson, 2000). For example, Internet-EDI has enabled several corporations to shift from manual purchasing to electronic purchasing. This shift has changed the field of purchasing forever (Giunipero & Sawchuk, 2000). Additionally, the decision to adopt EDI usually rests with the senior leadership of the company (Angeles & Nath, 2000; Ramaseshan, 1997). It is important to note here that EDI is also a key form of technology that is used in supply chain management strategies (SCM) in the retail industry. The interest in SCM strategies to meet ever-increasing competition in the retail industry continues to grow. Just in time (JIT) and quick response (QR) are SCM strategies that depend upon EDI for the effective transmission of business documents between the retailer and the manufacturer (Lu, Tsai, Chou, 2001; Walton & Gupta, 1999; Hart & Saunders, 1997; Ramaseshan, 1997; Whiteley, 1996; Banerjee & Sriram, 1995; Parker & SWATMAN, 1995; Ghobadian, Liu & Stainer, 1994; Holland, Lockett & Blackman, 1992).

The strategic importance of EDI is well represented in the literature. However, there has been little research, if any, conducted in the area of identifying how leadership style is related to the perceived benefits of EDI. With that said, the purpose of this study is to determine if leadership style is related to the perceived benefits of EDI in the retail industry.

Table 1. Forms of Information Technology Used in the Retail Industry (Powell & Dent-Micallef, 1997, p.386).

<table>
<thead>
<tr>
<th>Corporate Office Technologies</th>
<th>In-Store Technologies</th>
<th>Retail/Manufacturer Technologies</th>
<th>Retail Distribution Center Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic Data Interchange (EDI)</td>
<td>EDI</td>
<td>EDI</td>
<td>EDI</td>
</tr>
<tr>
<td>Fax</td>
<td>Fax</td>
<td>Fax</td>
<td>Fax</td>
</tr>
<tr>
<td>Email</td>
<td>Email</td>
<td>Email</td>
<td>Email</td>
</tr>
<tr>
<td>Satellite Communications</td>
<td>Satellite Communications</td>
<td>Paperless Funds Transfer Systems</td>
<td>Paperless Funds Transfer Systems</td>
</tr>
<tr>
<td>Customer Database Technology</td>
<td>Point of Sale Technologies</td>
<td>Advance Shipping Notice</td>
<td>Advance Shipping Notice</td>
</tr>
<tr>
<td>Data Mining/Warehousing</td>
<td>Climate Control Systems</td>
<td>Automatic Replenishment Systems</td>
<td>Automatic Replenishment Systems</td>
</tr>
<tr>
<td>Sales Forecasting Systems</td>
<td>Inventory Management Technologies</td>
<td>Inventory Management Technologies</td>
<td>Portable Scanning Terminals</td>
</tr>
<tr>
<td>Preferred Customer Technology</td>
<td>Automated Direct Mail Systems</td>
<td>Kiosks</td>
<td>Electronic Manifest</td>
</tr>
</tbody>
</table>
Statement of the Problem

Kunz (1995) found that leadership style is related to the implementation rates of information technologies such as EDI. Additionally, EDI has been found to be related to the successful implementation of SCM strategies such as JIT and QR (Walton & Gupta, 1999; Srinivasan, Kekre & Mukhopadhyay, 1994). However, EDI has not lived up to its forecasted expectations within the retail industry. Researchers have found that many retail firms do not take advantage of EDI’s full capabilities (Stefansson, 2002; Lu, et al., 2001; Kaefer & Bendoly, 2000; Lankford & Johnson, 2000; Holmes & Srivastava, 1999; Hunter & Valentino, 1995). Furthermore, Giunipero & Sawchuk (2000) state that organizations will adopt internet technologies such as Internet-EDI (I-EDI) at varying rates.

Some organizations may initially resist and dismiss the internet as a fad or trend that will eventually fade away. Other organizations will explore how they can use this technology in limited ways, and still others will aggressively pursue the technology and see it as a strategy to gain competitive advantage over other firms (Giunipero & Sawchuk, 2000, p. 10).

Expense is one of the primary reasons that retail executives have given for not implementing EDI (Hunter & Valentino, 1995, Ghobadian, Liu & Stainer, 1994). This may have been a valid reason when the only option available for using EDI was through the expensive services of a value added network (VAN). However, with the current development of internet EDI (I-EDI) and extensible markup language (XML), the cost to implement EDI is now minimal compared to costs in the past. In the 20th century, I-EDI requires simply a personal computer and access to the internet (Lankford & Johnson, 2000).

With technology that involves the electronic transfer of information, such as I-EDI, compatibility and security is always a concern. However, this is reported not to be a valid concern for the new EDI technologies being developed. For example, XML/EDI is compatible with current and prior EDI systems and the security of XML documents is just as reliable as any other form of electronic commerce (Lu, et al., 2001). In terms of I-EDI, there is a perception that the internet is an unsafe medium for the transmission of sensitive business documents. However, industry professionals insist that recent technological advances such as firewalls, encryption, data backup, and digital or electronic signatures have solved the security problem (Giunipero & Sawchuk, 2000; Lankford & Johnson, 2000).

Since these advances (I-EDI & XML) have had little effect on the implementation rate of EDI (Lu, et al., 2001; Holmes & Srivastava, 1999), this study proposes that the perceived benefits of EDI may be more related to implementation concerns and other issues from the executive leadership rather than cost alone. In other words, an individual’s leadership style (the person in a position to make critical decisions on behalf of his or her company) may be related to perceived benefits of EDI, which in turn is likely to determine if EDI is implemented. There are no known studies that have empirically tested leadership style as related to the perceived benefits of EDI. Therefore, the intent of this study is to investigate the relationship between leadership style and its relation to the perceived benefits of EDI in the retail industry.
Research Questions

1. What is the relationship between leadership style and the perceived usefulness of EDI to retail executives?

2. What is the relationship between leadership style and the perceived ease of use of EDI to retail executives?

Hypothesis

H1: The perceived ease of use of EDI is negatively correlated with retail executives identified as having a transactional leadership style.

H2: The perceived ease of use of EDI is positively correlated with retail executives identified as having a transformational leadership style.

H3: The perceived usefulness of EDI is negatively correlated with retail executives identified as having a transactional leadership style.

H4: The perceived usefulness of EDI is positively correlated with retail executives identified as having a transformational leadership style.

Scope and Limitations of the Study

This study is limited to executives who hold leadership positions at retail organizations throughout the United States. Additionally, the study will be limited to the retail executives that choose to participate in an electronic collection of data via the email and facsimile.

Definition of Terms

Barcode Technology: It is an automatic identification technology in which a laser or incandescent beam of light sweeps across a series of precisely defined bars and spaces. The lines are solid black and the spaces are bright white. The scanning beam hits the white and black surfaces, and the scanner photo detector, which turns them into electrical impulses. The impulses are relayed to a computer, which translates or encodes the information (Palmer, 1991).

Electronic Data Interchange: Electronic data interchange (EDI) is the movement of information electronically between or within firms in a structured, machine retrievable data format (barcode), to be transferred electronically from one location to another location (Kafer & Bendoly, 2000; Lankford & Johnson, 2000; Fiorito, May, & Straughn, 1995; Hodgson, 1995; Hunter & Valentino, 1995; Ghobadian, et al., 1994).
**Information Technology**: 1) A system made up of hardware, software, telecommunications equipment, workstations, robots, and smart chips (Johannessen, 1994). 2) The convergence of computing, telecommunications and imaging technologies (Chan, 2000).

**Inter-Organizational Systems**: Computer networks that are configured in a manner that enables the exchange of information within the boundaries of an company (Angeles & Nath, 2000; Walton & Gupta, 1999; Hart & Saunders, 1997; Vijayasarathy & Tyler, 1997; Banerjee & Sriram, 1995; Srinivasan, et al., 1994; Vlosky, Smith & Wilson, 1994).

**Just-in-Time (JIT)**: A system of manufacturing in which materials, parts and components are produced and delivered just before they are needed (Callen, Fader & Krinsky, 2000).

**Leadership**: The behavior of an individual that results in non-coercive influence when that person is directing and coordinating the activities of a group toward the accomplishment of a shared goal (Rowden, 2000). The two current leadership styles that will be analyzed in this study are transactional and transformational leadership. *Transactional leadership* emphasizes an exchange of rewards for compliance, the clarification of goals, work standards, and task assignments (Yukl, 1994). *Transformational leadership*: The process of influencing major changes in the attitudes and assumptions of organization members and building commitment for the organization’s mission or objectives (Yukl, 1994).

**Management Style**: There are two types of management style (Flippo, 1968). Behavioral Management Style: This type of manager considers the well being of his or her subordinates, creates a pleasant atmosphere in order to stimulate interaction, and attempts to build a team climate based on mutual interests. Functional Management Style: This type of manager dictates how all tasks are to be completed with little or no input from the subordinates.

**Perceived Ease of Use**: The degree to which a person believes that using a particular system would be free of effort (Davis, 1989).

**Perceived Usefulness**: The degree to which a person believes that using a particular system would enhance his or her job performance (Davis, 1989).

**Quick Response (QR)**: 1) “A new business strategy to optimize the flow of information and merchandise between channel members to maximize customer satisfaction (Ko & Kincade, 1997, p. 90).” 2) “A vertical strategy where the manufacturer strives to provide products and services to its retail customers in exact quantities on a continuous basis with minimum lead times, resulting in minimum inventory levels throughout the pipeline” (Fiorito, Giunipero & Yan, 1998, p. 237).

**Supply Chain Management (SCM)**: 1) All processes concerned with the enhancement of movement and handling of goods from point of production to point of consumption
(Kia, Shayan, & Ghotb, 2000). 2) A process for designing, developing, optimizing and managing the internal and external components of the supply system (Speckman, Kamauff & Myhr, 1998).
CHAPTER II

REVIEW OF LITERATURE

Interest in the development of leadership skills has been a major part of human societies since the beginning of recorded history, but the formal study of leadership began in the early 1900’s (Rowden, 2000). Since then, leadership has been researched more than any topic in the behavioral sciences; as a result there is an abundance of new concepts, and a lack of consensus for a leadership definition and theory (Bennis, 1959).

This study will focus on the leadership styles of retail executives and the perceived benefits (defined as ease of use and usefulness) of EDI. In order to develop a theoretical foundation, a review of management and leadership literature will be conducted. Six leadership approaches will be reviewed:

1. Trait Theory
2. Contingency Theory
3. Behavioral Theory
4. Power-Influence Theory
5. Transformational Theory
6. Transactional Theory

Two major management theories: functional and behavioral will be reviewed. The functional theory is the scientific management theory and the behavioral theory is McGregor’s (1960) theory of management.

A literature review will also be conducted on EDI. Electronic data interchange was chosen for this study because it is a specific form of information technology that is widely used in business (Lu, et al., 2001; Walton & Gupta, 1999; Hart & Saunders, 1997; Ramaseshan, 1997; Whiteley, 1996; Banerjee & Sriram, 1995; Parker & Swatman, 1995; Ghobadian, et al., 1994; Holland, Lockett & Blackman, 1992). In order to gain a firm understanding of how leadership style may be related to the perceived benefits of EDI, the components of EDI will be discussed.

This review will highlight how the perceived benefits of EDI may differ based on the leadership style of retail executives in leadership positions. The process of completing this goal will start with a review of the six major leadership theories beginning with the oldest (trait theory) to the most recent (transformational & transactional leadership theory).

Lastly, a review will be conducted that examines the perceived benefits of information technology. For this study, the perceived benefits that will be researched are the ease of use and the usefulness of information technology.
Leadership Theories

In social psychology, leadership theory is a top contender for being the most researched and controversial (Bennis, 1959). Even though there are several leadership approaches and theories that have been developed over the years, most of them fall into one of six major leadership categories:

1. Trait Theory
2. Contingency Theory
3. Behavioral Theory
4. Power-Influence Theory
5. Transformational Theory
6. Transactional Theory

In the following sections, each theory will be discussed. The general format will be to identify the goals of each theory and their pros and cons. Additionally, the concept of management, which some say is distinctly different from leadership, has a history that is based on high levels of debate and controversy (Bolman & Deal, 1989; Flippo, 1968; Sheldon, 1924; Koontz, 1961). In this field, most of the debates are centered on two forms of management theories: functional and behavioral (Flippo, 1968; Soujanen, 1963; Sheldon, 1924, Cooke, 1913, Taylor, 1911). These theories will be discussed following the leadership theories.

The Trait Theory

The predominant and earliest known theory of leadership is the great man theory, which was introduced in the 1940’s. This theory was based on the belief that great leaders throughout history possessed certain traits that enabled them to accomplish high levels of leadership effectiveness (Borgatta, Bales, & Couch, 1954). The research goal of the great man theory was to identify several traits that would distinguish leaders from non-leaders (Tannenbaum & Massarik, 1957). The hypothesis at the time was that the more leadership traits a person possessed, the more he or she is likely to be an effective leader (Yukl, 1994; Jago, 1982). Once these traits were known, they could be measured via standardized tests; which would predict future leadership effectiveness (Hughes, Ginnett & Curphy, 1999) (see Table 2.).

As a result of the extensive research conducted, several problems with this approach emerged. The most significant was the high level of inconsistencies of trying to predict leadership effectiveness based on a predefined set of traits. For example, the leadership trait intelligence was assumed to be directly related to leadership effectiveness, but research has shown that superior intelligence does not correlate to superior leadership and vice versa (Jago, 1982). Further research indicated that none of the traits guaranteed leadership success (Yukl, 1994). In the 1950’s, researchers started to discredit and
abandon the trait approach and focused on what leaders actually do in various work situations (Yukl, 1994; Jago, 1982; Schoenfeld, 1948). Focusing on the more observable characteristics of leadership moves into the area known as contingency theories, which will be discussed in the next section.

Table 2. Leadership Traits (Jago, 1982, p. 317).

<table>
<thead>
<tr>
<th>PERSONALITY TRAITS</th>
<th>SOCIAL TRAITS</th>
<th>ABILITY TRAITS</th>
<th>PHYSICAL TRAITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement Drive</td>
<td>Cooperative</td>
<td>Administrative</td>
<td>Activity</td>
</tr>
<tr>
<td>Adaptability</td>
<td>Interpersonal Skills</td>
<td>Intelligence</td>
<td>Energy level</td>
</tr>
<tr>
<td>Adjustment</td>
<td>Sensitivity</td>
<td>Judgment</td>
<td>Appearance</td>
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<tr>
<td>Aggressiveness</td>
<td>Popularity</td>
<td>Knowledge</td>
<td>Grooming</td>
</tr>
<tr>
<td>Alertness</td>
<td>Prestige</td>
<td>Technical Competence</td>
<td>Height &amp; Weight</td>
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<tr>
<td>Antiauthoritarianism</td>
<td>Sociability</td>
<td>Verbal fluency</td>
<td></td>
</tr>
<tr>
<td>Dominance</td>
<td>Socioeconomic level</td>
<td></td>
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<tr>
<td>Emotional Balance</td>
<td>Tact</td>
<td></td>
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<tr>
<td>Enthusiasm</td>
<td>Talkativeness</td>
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<td>Extraversion</td>
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<td>Initiative</td>
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<td>Insightfulness</td>
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<td>Integrity</td>
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<td>Objectivity</td>
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<td>Originality</td>
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<td>Persistence</td>
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<td>Responsibility</td>
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<td>Self-confidence</td>
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<td>Sense of Humor</td>
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<td>Tolerance of Stress</td>
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<td></td>
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</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Non-conformity</td>
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</table>

Contingency Theories

Instead of focusing on unobservable traits, many researchers shifted their attention to characteristics that a leader exhibits in various situations when he or she is interacting with followers (Tannenbaum & Massarik, 1957). This is known as contingency theory. The two best-known contingency theories are situational leadership theory and path-goal leadership theory which will be explained in the following sections.

Situational Leadership Theory

The situational leadership theory was developed by Hersey & Blanchard (1977). The primary basis for this approach is that the leader’s behavior is directly related to the maturity level of the subordinates (see Figure 1). For example, a leader may spend hours coaching and mentoring a follower that is new to an organization, but this same leader
may only spend a few minutes with followers that are highly skilled (Hughes, Ginnet, Curphy, 1999). The situational model is divided into four leadership styles: delegating, participating, selling, and telling (S1-S4), and four maturity levels (M1-M4). According to the situational approach, the leader will choose a particular leadership style based on the task and the maturity level of his or her followers. For example, the “telling style” is for people that are unwilling or unable to take responsibility and have low levels of competence, confidence, and maturity. Therefore, a leader will make the assumption that the subordinate falls into the M4 level, and will use a S1 leadership style, which involves specific guidance and high levels of direct supervision.

This model received several criticisms. The most significant is the fact that the model lacks internal consistency. A motivated person with very little talent may be perceived by a leader as having less maturity than an unmotivated person with talent. On the other hand, a motivated person with little talent may be perceived as having more maturity than an unmotivated person with talent if they simple say they are willing to learn (Graeff, 1983). This willingness to learn in no way guarantees that their talent will improve. Additionally, Carines, Hollenback, Preziosi & Snow (1998), empirically tested the situational leadership theory on 151 senior level executives that were employed by Fortune 100 companies and found very little support for this theory. As a result, they concluded that the situational leadership theory remains “intuitively appealing and empirically contradictory” (Carines, et al. 1998, p. 113). The next theory that showed
promise was the *path-goal leadership theory*. This theory was based on showing followers a goal and providing them with the means and direction to achieve it.

**Path-Goal Leadership Theory**

The *path-goal leadership theory* was reformulated by Robert J. House (1971) and was based on the work of Evans (1970). This theory argues that a leader can adjust his or her own behaviors in order to adapt to changing situations via using the most appropriate leadership that will help to achieve organizational goals and objectives (see Figure 2). The main goal of this theory is to provide subordinates with the right form of leadership and direction that will enable them to meet their goals as well as the goals set out by the organization (Silverthorne, 2001). This theory is based on four leadership styles:

1. Directive Leadership
2. Supportive Leadership
3. Participative Leadership
4. Achievement Oriented Leadership

Directive leaders tell subordinates what is expected of them and give specific guidance and enforce rules and procedures. Supportive leaders prefer a friendly environment and give strong attention to the needs of the subordinates. Participative leaders involve subordinates in the decision-making process. Lastly, achievement-oriented leaders seek to improve performance by instilling confidence in subordinates to help them achieve the standards set out by the organization (Silverthorne, 2001; Hughes, Ginnet, & Curphy, 1999). If the task is well defined then less guidance is needed and the leader can be less directive, whereas, if the task is poorly defined, subordinates will require more guidance and direction from the leader. The research on the *path-goal leadership theory* has been mixed at best with most of the findings supporting a correlation between the model and subordinate satisfaction. However, there has been little empirical evidence that this model relates to improved subordinate performance (Silverthorne, 2001, Yukl, 1994; Hughes, Ginnet, & Curphy, 1999; Newstrom & Davis, 1993).

![Figure 2. Path Goal Leadership Process (Newstrom & Davis, 1993, p233).](image)

**Behavioral Leadership Theory**

The next attempt to find a leadership theory that could sustain empirical testing was the *behavioral theory*. The *behavioral leadership theory* began with the Ohio State study in the late 1940’s (Robbins, 1993). The purpose of this research was to identify
specific leader behaviors. The result was that over a thousand different leadership behaviors were identified. After considerable research, the Ohio State researchers grouped the behaviors into two specific areas: initiating structure and consideration (Robbins, 1993).

Initiating structure is the extent that a leader defines and structures his or her position and his or her relationship for how organizational goals will be completed. Considerations include the leader’s ability to form relationships based on mutual trust and respect for the subordinates. Even though the massive volume of behavioral research showed promise, this theory suffered the same fate as the others in that it could not consistently identify leadership behavior (Robbins, 1993).

**Power Influence Theory**

The *power influence theory* is based on five forms of power that were developed by French and Raven (1959):

1. Reward Power
2. Coercive Power
3. Legitimate Power
4. Referent Power
5. Expert Power

In their research, French and Raven (1959) define reward power as the power to give or withhold something of value as perceived by others. Coercive power is the power to inflict some kind of punishment that others want to avoid. Legitimate power is the power to use a position, or superior knowledge, or greater experience to persuade others to perform tasks based on the belief that they have the authority to do so. Referent power is the power to influence people to do things based on their personality, social status, or popularity. Lastly, Expert power is the ability to influence others based on a superior skill. Since the late 1950’s, the *power influence theory* has been heavily researched across all areas of leadership and management in the behavioral sciences (Hughes, Ginnet & Curphy, 1999).

In the late 1970’s, two leadership theories emerged in the business world: *transactional* and *transformational*. From their debut to the present, these two theories have been heavily researched and show the greatest level of promise in the quest to identify leadership attributes that can withstand the test of empirical research (Rowden, 2000).

**Transformational & Transactional Leadership Theory**

The concept of *transformational* and *transactional* leadership was originally developed by Burns (1978). In his research, Burns (1978) studied the leadership characteristics of several political leaders. As a result, he defined *transformational leadership* as the process in which leaders and followers raise one another to higher levels of morality and motivation; and *transactional leadership* as an exchange of rewards for compliance.
Bass (1985) further developed this theory by expanding Burns (1978) ideas and applied them to the business industry. Bass (1985) expanded the theory by adding five characteristics (see Figure 3), three of which are the foundation of *transformational leadership*: charismatic leadership, individualized consideration, and intellectual stimulation, and the remaining two characteristics are the foundation for *transactional leadership*: management by exception and reward contingency.

Charismatic leadership is defined as a process wherein a leader influences followers by arousing strong emotion and identification with the leader. Individualized consideration is the process by which the leader advises, mentors, and respects each subordinate as an individual. Intellectual stimulation is the process that leaders use to increase subordinates’ awareness of problems and encourages them to use different and creative methods to solve them (Metcalfe & Metcalfe, 2000; Popper & Zakkai, 1994; Yukl, 1994; Robbins, 1993). Contingent reward is the process leaders use to outline specific tasks that need to be completed in order to receive rewards. Lastly, management by exception is when the leader only intervenes when tasks are not being completed in accordance with regulations (Popper & Zakkai, 1994; Yukl, 1994; Robbins, 1993).

![Figure 3. Transformation & Transactional Leadership Components.](image)

Management concepts are included within the *transactional leadership* theory. There are no concepts of management under the *transformational leadership* theory. Earlier, it was mentioned that leadership and management theory have sometimes been used interchangeably, but researchers point out that there are key differences between the two. In the next section, management theory will be reviewed with the goal of illustrating the differences between management and leadership.
Management Theory

The study of management theory has a long history of debates and controversy. The study of management theory began in the early 1900’s and as a result of the high volume of research conducted, one of the few agreements among practitioners, and scholars was that there were three types of management: functional, behavioral, and quantitative (Flippo, 1968). The majority of the debates were based around the functional and behavioral management approaches (Flippo, 1968). The functional approach is a downward philosophy where everything starts with management and is pushed down to subordinates. Examples of functional management are the theory of scientific management and the theory X management style. The behavioral approach focuses on the human aspect where the goals, feelings, and needs of the members are taken into consideration with the same level of importance as organizational goals (Flippo, 1968; Soujianen, 1963; Sheldon, 1924, Cooke, 1913, Taylor, 1911). McGregor’s (1960) theory Y is an example of the behavioral management philosophy. In the next section these management theories will be reviewed.

Scientific Management

It is an empirical consensus that Frederick Taylor is the founder of the formal study of management (Flippo, 1968; Soujianen, 1963; Koontz, 1961; Massie, 1958). According to Taylor (1911) management is responsible “to secure the maximum prosperity for the employer, coupled with the maximum prosperity for each employee (Taylor, 1911, p.9).”

In addition to being one of the first practitioners to define the concept of management, Fredrick Taylor (1911) also developed the first method of implementing a management philosophy aimed at maximizing production within organizations. The concept that is used to describe this philosophy is scientific management, and it is a functional management approach based on four principles (Taylor, 1911, p.36):

1. The development of a science in place of “rule of thumb” for each element of work.

2. The scientific selection and training of the workman

3. Instilling a level of cooperation so that all work being done is completed in accordance with methods developed by scientific management.

4. An almost equal division of the work and responsibility between the management and the workmen, the management taking over all work for which they are better fitted than the workmen.

An interesting aspect of the philosophy of scientific management is that Taylor’s (1911) motivations were not publicly known nor did he defend his work after it was published. One of the earliest public complaints about Taylor’s (1911) lack of further explanation of his work was by Morris Cooke (1913) when he stated:
It was only within strictly technical circles and among his own friends that anything was known of this man, his work, and the great movement he had originated; on which, in the opinion of many of those most competent to judge, will ultimately affect the lives of all men and women. Up to two years ago, I do not remember to have seen more than one reference to scientific management in the daily press. It seemed practically impossible to get a hearing for scientific management, except from isolated individuals, who were forced to it on account of the necessities of some particular business or industry in which they happened to be interested (Cooke, 1913, p.483).

As a result of Frederick Taylor (1911) not publishing additional information pertaining to scientific management, Cooke (1913) took the initiative and developed an expanded list of this theory which is as follows (Cooke, 1913, p.487):

- It is a definite working policy applicable wherever human effort is put forth.
- It is the introduction of the laboratory method in everyday affairs.
- It is the acceptance of the dictates of science instead of those of personal opinion and tradition.
- It is the establishment of the fact that not to know is no crime, but the crime is not being willing to find out.
- It is a type of cooperation more intense than the world has yet seen.
- It is filling in, not bridging the chasm between capital and labor.
- It is making our industrial life square up with the best we know in our personal and social relations.
- It involves a very radical change in the attitude both of the men and the management to the work on which they are mutually engaged.

Further explanation of this philosophy was done by Frank Gilbreth (1914) when he described the process of a time study, which is the basis for the entire scientific management philosophy. The purpose of a time study has five parts (Gilbreth, 1914, p.13):

1. To obtain all the existing information about the art or trade being investigated that is possessed by the present masters, journeymen, and experts of that trade, who obtained most of their information through the “journeyman to apprentice method” of teaching.
2. To get the most exact information regarding the time required to perform each element of the operation, so that in building up the standard method so that the quickest elements and motions may be selected, in order that the workman can, other things being equal, use a method consisting of elements requiring the least time to perform.

3. To determine which motions and elements are the least fatiguing, that the worker may be caused no unnecessary fatigue in his work, nor any fatigue outside of his work.

4. To determine the amount of actual rest that each kind of work requires, to ensure that neither the manager or the worker does not over exert themselves in order to obtain an increase over and above the parameters set by scientific management.

5. To determine the personal coefficient of each applicant for certain kinds of work, that he may be assisted in entering that position for which he is best fitted.

Taylor’s (1911) relatively simple definition of management and his scientific approach to implement his philosophy sparked a debate when his book, Principles of Scientific Management, was published in 1911 (Shenar & Renier, 1996). Fifty years after its publication, it was relatively impossible to find two people who shared more than a general view of management. Any attempt to discuss this concept on any theoretical level was quickly overwhelmed by emotional heat (Suojanen, 1963). The next major advance in the study of management came from McGregor (1960) when he proposed two general management styles: Theory X and Y.

**Theory X & Y**


1. The average human being has an inherent dislike of work and will avoid it if he or she can.

2. Because of this human characteristic of dislike of work, most people must be coerced, controlled, directed, and threatened with punishment to get them to put forth adequate effort toward the achievement of organizational objectives.

3. The average human being prefers to be directed, wishes to avoid responsibility, has relatively little ambition, and wants security above all.
Theory X is regarded by researchers and practitioners as the functional approach to management because it views the subordinate worker as limited in ability and talent thus requiring all decisions to be made by the management (Kunz, 1995; Flippo, 1968; Suojanen, 1963).

McGregor (1960) developed theory Y as a result of the advances made by the social sciences. Theory Y has six assumptions that are supported by the behaviorist (McGregor, 1960, p. 47):

1. The expenditure of physical and mental effort in work is as natural as play or rest. The average human being does not inherently dislike work. Depending upon controllable conditions, work may be a source of satisfaction (and will be voluntarily performed) or a source of punishment (and will be avoided if possible).

2. External control and the threat of punishment are not the only means for bringing about effort toward organizational objectives. Man will exercise self-direction and self-control toward an objective to which he is committed.

3. Commitment to objective is a function of the rewards associated with their achievement. The most significant of such rewards, e.g., the satisfaction of ego, and self-actualization needs, can be direct products of effort directed toward organizational objectives.

4. The average human being learns, under proper conditions, not only to accept but also to seek responsibility. Avoidance of responsibility, lack of ambition, and emphasis on security are generally consequences of experience, not inherent human characteristics.

5. The capacity to exercise a relatively high degree of imagination, ingenuity, and creativity in the solution of organizational problems is widely, not narrowly, distributed in the population.

6. Under the conditions of modern industrial life, the intellectual potentialities of the average human being are only partially utilized.

The central theme behind theory X management is based on control via absolute authority over subordinates. With theory Y, the central theme is based on integration, meaning that it is management’s responsibility to create working conditions in a manner that the workers of an organization can achieve their own goals by directing their efforts towards the success of the company (McGregor, 1960). Theory X and Y management styles are profoundly different and according to McGregor (1960) are so firmly entrenched in our attitudes and beliefs about life in general that once a person develops a type of management style, it is very difficult for that person to change. The following quote by McGregor (1960) summarizes this belief:
Fish discover water last. The psychological environment of industrial management, like water for fish, is so much a part of organizational life that we are unaware of it. Certain characteristics of our society, and of organizational life within it, are so completely established, so pervasive, that we cannot conceive of there being otherwise (McGregor, 1960, p. 49).

**Leadership & Management**

Looking at the leadership and management characteristics, it is easy to see that there is a difference between the two (see Table 3). Fortunately, there is much agreement among researchers about the key differences between leadership and management; but very little agreement as to the definition of leadership (Rowden, 2000; Yukl, 1994; Bennis, 1994). Both sets of theories have been subject of massive amounts of research. As stated earlier, this study will focus on the leadership theories described as *transactional* and *transformational*. These leadership theories show a high level of promise for being able to withstand empirical research over a long period of time as compared to theories of the past.

**Table 3. Leadership vs. Management (Bennis, 1994).**

<table>
<thead>
<tr>
<th>LEADERS:</th>
<th>MANAGERS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovate</td>
<td>Administer</td>
</tr>
<tr>
<td>Develop</td>
<td>Maintain</td>
</tr>
<tr>
<td>Have Vision</td>
<td>View The Present</td>
</tr>
<tr>
<td>Ask What And Why</td>
<td>Ask How And When</td>
</tr>
<tr>
<td>Challenge Tradition</td>
<td>Accept The Status Quo</td>
</tr>
<tr>
<td>Inspire</td>
<td>Control</td>
</tr>
<tr>
<td>Originate</td>
<td>Imitate</td>
</tr>
</tbody>
</table>

As a review, Table 4 places the management and leadership theories on a timeline to enable to the reader to appreciate the contributions of researchers from the past and present. Bass (1985) was the first to apply the *transformational* and *transactional leadership* theories from the political arena to the business world.

In order to make the connection for how leadership style maybe related to the perceived benefits and future implementation of EDI, a general review of information technology along with a detailed review of EDI will be conducted in the next section.
Table 4. Leadership/Management Timeline

<table>
<thead>
<tr>
<th>Year</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000+</td>
<td>MLQ retested by Bycio, Allen &amp; Hackett (1995). Published by Branden &amp; Netemeyer (1999) as a valid scale. The MLQ is the only leadership theory that has survived empirical testing since 1978.</td>
</tr>
<tr>
<td>1967</td>
<td>The development of Contingency Leadership Theory by Fiedler (1967).</td>
</tr>
<tr>
<td>1940</td>
<td>The development of the Behavioral Approach from the Ohio State studies</td>
</tr>
<tr>
<td>1930</td>
<td>The Great Man Theory proposed. Massive Studies Conducted on the Trait Approach to Leadership.</td>
</tr>
<tr>
<td>1911</td>
<td>The Development of Scientific Management by Taylor (1911).</td>
</tr>
<tr>
<td>1911</td>
<td>The Development of Scientific Management by Taylor (1911).</td>
</tr>
<tr>
<td>1900</td>
<td>The Development of Scientific Management by Taylor (1911).</td>
</tr>
</tbody>
</table>

Supply Chain Management

Kia, Shayan, & Ghotb (2000) define Supply Chain Management (SCM) as all processes concerned with the enhancement of movement and handling of goods from the point of production to the point of consumption. In the 1950s and 1960s, most manufacturers emphasized mass production to minimize unit production costs as the primary operations strategy, with little product or process flexibility (Tan, 2001). Additionally, many US organizations maintained a massive sales force, and long unchanging production runs. This method of operation worked until the early 1980s
when global competition caused a significant decline in the world position of United States manufacturing.

Sluggish industry growth rates and sales forced the manufacturing industry to change how they conducted business by adopting new strategies (Tan, 2001; Kincade, 1995). For example, to produce a garment from raw materials, manufacturers commonly took 40-66 weeks (Lummus & Vokurka, 1999). As a result of global competition, manufactures must now produce a larger variety of products at competitive prices and replenish the products sold in each store in a matter of days instead of months in order to maintain a competitive advantage (Abernathy, et al., 2000). Shortly after the textile and grocery industry initiatives, other retailers started adopting the SCM philosophy. Some of these include: Hewlett-Packard, Whirlpool, Wal-Mart, and the Georgia-Pacific Corporation (Lummus & Vokurka, 1999).

These new strategies within the manufacturing, grocery, and retail industry were aimed at reducing inventory levels, decreasing delivery times, and anticipating customer demand. Today, this process is commonly referred to Supply Chain Management (SCM). SCM strategies typically require sophisticated information technology, such as EDI, that is configured so that it can efficiently handle incoming shipments from suppliers, checking them against orders for content, processing receipts from and payments to suppliers, and rapidly routing those orders to the proper store (Tan, 2001; Abernathy, et al., 2000; Speckman, Kamauff & Myhr, 1998).

Several definitions for the SCM concept have been proposed. As stated earlier, Kia, Shayan, & Ghotb (2000) define SCM as all processes concerned with the enhancement of movement and handling of goods from the point of production to the point of consumption. Speckman, Kamauff & Myhr (1998) define SCM as a process for designing, developing, optimizing and managing the internal and external components of the supply system. Even though the definitions of SCM are varied, the one aspect of a SCM strategy is that most, if not all supply chains, use some form of EDI and are organized horizontally (the traditional style), or vertically which is typically used in the textile/apparel/retail industries (Tan, 2001; Speckman, et al., 1998; Forza & Vinelli, 1997) (see Figures 4 & 5).

![Diagram of typical textile/apparel supply chain](image)

**Figure 4.** Typical textile/apparel supply chain (Forza & Vinelli, 1997, p. 126).
However, as more industries integrate their processes with the internet, virtual/circular supply chains (see Figure 6) are emerging as the predominant model because they show how internet-based supply-chain management (SCM) solutions links customers, suppliers, factories, warehouses, distributors, carriers, and trading partners into one virtual enterprise (Borck, 2001, Giunipero & Sawchuck, 2000). The advantage of virtual/circular supply chains is their flexibility. They will be able to service users on demand and add or subtract links to meet customer requirements (Antonette, Giunipero, Sawchuck, 2002). Currently, the retail/apparel/textile industry adopts both vertical and horizontal supply chains and use the SCM strategy commonly known as Quick Response, which will be discussed in the next section.

**Quick Response**

Quick response (QR) is a supply chain management strategy that relies on electronic data interchange in order to be effective. QR is defined as a vertical strategy...
where the manufacturer strives to provide products and services to its retail customers in exact quantities on a continuous basis with minimum lead times, resulting in minimum inventory levels throughout the supply chain (Fiorito et al., 1995). During the 1970’s, in the apparel industry, the strategy of flexible manufacturing was viewed as insignificant as compared to some of the strategies used at the time such as maintaining a massive sales force, and long unchanging productions runs. However, the general decline in the world position of United States manufacturing and sluggish industry growth rates in the early 1980s has all but eliminated these strategies and has forced apparel manufactures to seek new management systems.

In 1985, According to Data Resources Inc., textile/apparel employment was predicted to be cut in half, and related industries, such as the retail industry, may lose 943,000+ jobs. In order to prevent a massive loss of market share, five strategies were proposed by managers, trade associations, consulting firms, consumer lobbies, and all levels of government in order to improve the competitive positioning for the apparel industry (Kincade, 1995):

1. Request for government intervention (lobbying for protectionist measures to slow imports).
2. The development and promotion of the “Buy American” campaign.
3. Automation of the apparel industry.
4. Focus on responsiveness to consumers.
5. Revision of corporate structures.

QR was formulated in response to a decline in competitiveness and the five strategies listed above. Once the foundation was formed, the next step was to bring the key players in the industry to the table and discuss the development of a new management system. This occurred in 1985 at the Textile Apparel Linkage Council meeting where visions of QR were discussed (Kincade, 1995). Since then, QR has been the topic of great interest to the apparel industry (Hunter & Valentino, 1995), and QR systems are being implemented by retail firms at an ever-quickening pace throughout the United States (Fiorito, et al., 1998).

The QR strategy is compatible and complimentary to the Just In Time (JIT) strategy. However, the key difference between the two is that JIT’s goal is to minimize inventory whereas QR’s goal is to ensure that inventory is available when the customer wants it (Fiorito, et al., 1995). Another unique aspect of QR is its implementation problems. In addition to the typical problems associated with QR implementation such as cost and training, a deeper investigation found that this system required a theory Y management style, but it was being implemented in an industry that historically practiced the theory X management style (Kunz, 1995).

Since management’s perception of the information technology that supports QR was consistently viewed in a negative light (Forza & Vinelli, 2000; Perry, Sohal, & Rumpf, 1999), it is imperative that management style and the technology that supports QR be studied. In order for QR to work, it requires the use of various technologies to support accurate, frequent, and efficient communications systems. In the next section, the following components of the QR strategy will be discussed: barcode technology, history, implementation problems, and leadership support.
A significant asset to EDI technology is barcodes. Without barcode technology, EDI as it is used in the textile/apparel industry would be impossible. The reported advantages of QR and its resultant technologies include: quicker deliveries, reduced shipping costs, faster inventory turns, fewer stock outs, fewer markdowns, and lower inventory investment, all of which can positively impact profits (Fiorito, et al., 1998).

The Universal Product Code (UPC) and its associated symbology is the backbone of barcode technology that is used to facilitate QR in the textile/apparel industry. It is an automatic identification technology in which a laser or incandescent beam of light sweeps across a symbol that consist of a series of precisely defined bars, dots, lines, and spaces (Palmer, 1991). The lines, dots, and bars are solid black and the spaces are bright white. The scanning beam hits the white and black surfaces and the scanner photo detector turns them into electrical impulses. The impulses are relayed to a computer, which translates or encodes the information. The manner in which these lines, dots, and spaces are organized is called a barcode. If a particular barcode format is exclusively used in an industry, then it is called a UPC. “Bar codes can be thought of as a printed version of the Morse code,” says Roger Palmer (1991, p. 1), author of the Bar Code Book, “with narrow bars representing dots and wide bars representing dashes.” There are several UPCs used worldwide (see Figure 7). Each combination of lines and spaces is unique, which the computer reads.

![Figure 7. Types of Universal Product Codes barcodes](image)

The implementation of QR requires a large investment and a new way of managing people and assets. In order to do this, it requires significant changes in management practices and corporate culture, which are historically slow to occur and frequently require the ascension of a new generation of leaders (Hunter & Valentino, 1995).

Establishing partnerships is another requirement for the facilitation of QR. This is a major obstacle to many companies because most of the profits coming from the practice of QR go to the retailer, while the up-stream participants take on most of the cost burden. Without some sharing of the benefits as well as the costs; partnerships are unlikely to develop (Hunter, & Valentino, 1995).

It is a clear consistent message throughout the trade and academic literature that leadership support is a crucial factor for the successful implementation of QR. For example, Forza and Vinelli (2000) found that managers in the textile/apparel chain could not agree on the methods that would be employed in order to carrying out innovations aimed at time compression within the chain. From the literature review conducted by
Angeles and Nath (2000), they found that in order to implement EDI, a key technology used in QR, top leadership support was a critical factor. Furthermore, Perry, Sohal, and Rumpf (1999) found in their research that some of the impediments to QR success were a lack of dedication from senior leadership along with negative mindsets, poor interpersonal/communication skills, and mindsets steeped in the traditions of mass production. The following quote from a respondent sums up his or her perception of management support for EDI and QR adoption (Fiorito, et al., 1998, p. 244):

I think our management is hesitant to implement any of this (even EDI) because of initial cost output (i.e., new terminal, training, etc.). I think they talk big about it with little or no actual plan to implement. Please bombard the CEO, and GMMs with positive information continuously.

Information Technology

The concept of information technology was derived from information handling systems. One of the pioneers in the study of information handling systems was Andrew Vazsonyi (1965). His work was based on the premise that the level of information available throughout the world is expanding at a rapid rate, and the management of this information would soon surpass a human’s ability to manage it. Shortly after his work was published, the formal study of information technology began at the University of Minnesota in 1968 when it started its academic program in information systems. This was the first research program of its kind in the United States (Claver, Gonzalez & Llopis, 2000). There are several definitions for information technology. Chan (2000) defines it as the convergence of computing, telecommunications and imaging technologies. It has also been defined as a system made up of hardware, software, telecommunications equipment, workstations, robots, and smart chips (Johannessen, 1994). These components of information technology are used to process data, gather information, store information, accumulate knowledge, and expedite communication in almost every organization in the world (Chan, 2000).

However, the incredible growth of information technology did not occur until the 1980’s when corporate America spent approximately $98 billion on information technology (Claver, et al., 2000; Roberts & Henderson, 2000; Johannessen, 1994). These purchases were aimed at automating routine tasks typically performed by humans (Claver, et al., 2000). Information technology has expanded well beyond routine tasks, it is dramatically changing the nature of the world in which we live. It is changing how wealth is created, altering the distribution of power, and increasing the complexity of our lives (Alberts, Garstka & Stein, 1999).

The following topic areas will be reviewed in order to offer support for the objectives of this study: goals of information technology, competitive advantage, technology acceptance, EDI, and business strategies that rely on EDI. Electronic data interchange was chosen for this study because it is the most well known form of information technology in the retail industry, but its popularity does not positively correlate to actual implementation and usage (Stefansson, 2002; Lu, Tsai & Chou, 2001; Lankford & Johnson, 2000; Holmes & Srivastava, 1999; Murphy & Daley, 1998; Ramaseshan, 1997; Ricks, 1997; Whiteley, 1996; Hodgson, 1995; Parker & Swatman, 1995; Banerjee & Sriram, 1995; Gheobadian, Liu & Stainer, 1994; Robson, 1994; Vlosky, 1994).
Smith & Wilson, 1994). In this research, information technology will be defined as a system made up of hardware, software, telecommunications equipment, workstations, robots, and smart chips (Johannessen, 1994). This definition was chosen because it encompasses the components of EDI which is the form of information technology that will be researched in this study.

**Goals of Information Technology**

Information technology has forever changed the concept of time and space. With information technology, it is possible to send documents the size of an entire encyclopedia set in a few seconds to any location in the world. This capability has enabled multinational corporations to integrate their operations on a worldwide scale (Anandarajan, Igbara & Anakwe, 2000).

The most observable growth area of information technology is the continual increase in the amount of information that can be stored and the continual decrease in the time that it takes to retrieve this information (Alberts, et al., 1999). This has proportionately increased the responsibility of leaders and managers in all functional areas. They must now exercise their authority over how information technology will be used in their respective organizations (Martin, Hoffer, DeHayes & Perkins, 1991). Additionally, this rapid expansion of information technology is becoming a top priority with the senior leadership of many organizations as it relates to the successful financial performance of the firm (Powell & Dent-Micallef, 1997).

As stated earlier, one of the main goals of information technology during the 1980s was to automate routine tasks (Claver, et al., 2000). Today, the benefits of information technology have expanded far beyond routine tasks; organizations use it to gain a competitive advantage via improved productivity, performance, business expansion, and reorganization (Spanos, Prastacos & Poulmenakou, 2002; Powell & Dent-Micallef, 1997; Whiteley, 1996).

**Competitive Advantage**

According to Michael Porter (1986), in order to be competitive, the leadership of an organization must invest in information technology. Michael Porter’s book entitled, *Competitive Advantage*, (1986) brought increased interest in the topic. Many organizations today understand what it takes to gain a competitive advantage, but maintaining that advantage is a different story. For example, Powell & Dent-Micallef (1997), found that of the 30 companies they tracked from the 1970’s to the 1980s, 21 of them experienced a loss in market share within five years of implementing information technology. Furthermore, Joseph Morone (1993), found that a firms ability to build competitive advantage depends on the practices of the management.

What Porter and Morone (1986) revealed in their work and what many companies failed to understand is that in order to sustain competitive advantage, their technology must be combined with human intangibles such as leadership, cognitive ability, and organizational culture (Powell & Dent-Micallef, 1997). These attributes are not as easy to come by as information technology. Therefore, in order to sustain a competitive
advantage, there must be something an organization does that cannot be easily replicated by another organization.

Mata, Fuerst, & Barney (1995) developed a model that showed a graphical depiction of how a resource such as information technology contribute or hinder a company’s ability to maintain a competitive edge over the competition (see Figure 8). The model is based on three questions: 1) Does a capability add value to an organization in a manner that would not be possible without the capability? As the model depicts, if a firm exploits a capability that is of no value to the organization then this capability will result in competitive disadvantage. 2) Is the capability heterogeneously distributed across competing organizations? If several competing companies possess the same capability then the capability will not be a source of competitive advantage. At best, the company will experience competitive parity as illustrated by figure 4 (Mata, et al., 1995). 3) Is a capability imperfectly mobile? For this question, Mata, et al., 1995 states the following:

If firms without a valuable resource are at no disadvantage in acquiring, developing, and using it compared to firms that already possess this resource, then it will only be a source of temporary competitive advantage for the firms that originally controlled it. On the other hand, when a resource or capability is immobile, then firms without this resource face significant challenges in acquiring, developing, and using it. This resource or capability may then be a source of sustained competitive advantage for firms that control it (Mata, et al., 1995, p. 495).

Figure 8. RESOURCE BASED MODEL OF COMPETITIVE ADVANTAGE.
(Mata, Fuerst & Barney, 1995, p. 494)
As stated earlier by Porter (1986), attaining information technology is very important if an organization wants to survive in today’s market. However, in order for a company to sustain competitive advantage, there must be a capability or resource that is not accessible to competing firms. Additionally, Mata et al. (1995) summarize their research by stating that the relationships that the leaders within an organization develop with other business processes are the key to sustained competitive advantage. The complex dynamics involved with building relationships is in most cases imperfectly mobile which can be extremely difficult for competing organizations to acquire.

A capability that many retail organizations are aware of is electronic data interchange. Today, this technology is available to just about any organization that wants it, and in many cases it is a requirement for doing business with other organizations. However, in the retail industry this technology is not being implemented at a rate it was predicted to have when it was developed. Since EDI is a valuable resource that appears to be difficult to acquire within the retail industry, then it appears that if a retail organization can successfully implement EDI it will have a sustained competitive advantage (Mata et al., 1995; Porter, 1986).

As will be shown in the sections that follow, the implementation rates of electronic data interchange are directly related to how the leadership views this technology. This research will attempt to determine if a specific leadership style (transformational or transactional) is related to the perceived benefits of this technology.

Electronic Data Interchange

Computer networks that are configured in a manner that enables the exchange of information are named Inter-Organizational Systems (IOS). Electronic data interchange (EDI) is an IOS that is used inside and outside of organizational boundaries (Angeles & Nath, 2000; Walton & Gupta, 1999; Hart & Saunders, 1997; Vijayasarathy & Tyler, 1997; Banerjee & Sriram, 1995; Srinivasan, Kekre & Mukhopadhyay, 1994; Vlosky, Smith & Wilson, 1994).

Electronic data interchange is defined as a form of electronic communication that allows businesses to exchange transaction data and documents between or within firms in a structured format that can be processed by computer software from one location to another location (Kaefer & Bendoly, 2000; Lankford & Johnson, 2000; Fiorito, et al., 1995; Hodgson, 1995; Hunter & Valentino, 1995; Ghobadian, Liu & Stainer, 1994). This technology gives retail vendors the capability of swiftly supplying the distribution chain with the information (purchases orders, shipping invoices, contracts, funds transfer, etc.) that will enable retail stores and manufacturers to maintain their inventories at optimum levels (Fiorito, et al., 1998). Following will be a discussion of: the background and benefits of EDI; batch, real-time , Internet EDI (HTML), Extensible Mark Up Language (XML) EDI, and finally, EDI implementation issues.

Background

The origin of EDI dates back to June of 1948 when military forces of the Soviet Union banned all land and water traffic into the German capital city, Berlin. The United States and its allies were faced with two options: abandon the city, or supply Berlin’s
people with food, water, and other necessities. On 26 July 1948, the secretary of defense, James Forrestal, presented his recommendation to the National Security Council (James Forrestal, 1948). The decision was to stay and feed the people of Berlin via one of the largest airlifts in aviation history: The Berlin Airlift (Bass, Miller & Nylin, 2001; Clark, 2001).

Colonel Ed Guilbert, United States Air Force, was the officer in charge for all logistics that pertained to this mission. Due to the massive amount of supplies that had to be transported and delivered (Forrestal, 1948), a method of communicating with each plane to determine what it carried was required. As a result, Guilbert ordered that all manifests be in English and transmitted by telex before landing. The efficiency this brought to that massive and unprecedented undertaking made possible the continuous flow of cargo, from aircraft to ground transportation to its final destination without warehousing. Guilbert’s electronic manifest was the beginning of EDI and made Ed Guilbert “the father of EDI” (Bass, Miller & Nylin, 2001; Notto, 1998).

In 1968, after his Air Force career, Guilbert convened the first meeting of the Transportation Data Coordination Committee (TDCC) with the goal of transferring the benefits of EDI to the business industry. In 1975, the first set of EDI standards was published. These first standards—specifically for air, ocean, motor, and rail transportation—drew on what Guilbert had accomplished 20 years earlier in the Airlift (Bass, Miller & Nylin, 2001).

Shortly after the publication of EDI standards, Paul Lemme, a data processing professional, recognized the value of EDI. He immediately took steps to develop this technology to a “point of no return” meaning that once a certain number of major companies recognized the value of EDI, it would never disappear; just expand and improve (Notto, 1998).

Paul Lemme was a major contributor to EDI standardization that led to its implementation in the grocery industry. The standardization process began in 1975 when the TDCC published EDI standards. However, in 1984 a division was created as to what EDI was or was not. This division was created when the American National Standards Institute (ANSI) chartered the Accredited Standards Committee (ASC) X12 to develop uniform standards for inter-industry electronic exchange of EDI business transactions (Giunipero & Sawchuk, 2000; Clark, 2001). As a result, the TDCC and the ANSI ASC X12 committees were assigning conflicting elements of definition and identification for critical elements of EDI (Clarke, 2001; Notto, 1998).

To resolve this division, a Joint EDI (JEDI) committee was formed with members from TDCC and X12. At the JEDI meetings, Paul Lemme was a strong advocate of inter-industry cooperation and was recognized as the statesmen for EDI. Two years later, many of the differences between the two organizations were resolved and the goal of developing an EDI standard was back on track. As a result of Paul Lemme’s efforts, he has been credited as being one of the pioneers of EDI standardization (Notto, 1998). In addition to being a forceful advocate for EDI interagency cooperation, he also accomplished the following:

- From 1984 to 1997 he was an instructor of a monthly class on EDI implementation.
- In 1988 he became the executive director of the TDCC.
In 1991 he published, EDI Success, a book intended to provide a blueprint for group success developing EDI as a strategic initiative within a particular community of interest. The first EDI systems were all mainframe based. Today, however, EDI is available in a wide variety of computer-based formats ranging from palm pilots to mainframe computer systems. This advance in technology enables the exchange of business information between the computers of different organizations regardless of size, make, or geographical location. Electronic data interchange has progressed significantly since the early days when the first generation of EDI software only provided a basic translation process (Robson, 1994).

**Benefits of EDI**

One of the most popular benefits of EDI is that it enables companies to replace traditional modes of exchanging routine documents with faster more efficient communications systems. With EDI, these business documents can now be transmitted electronically over networks, rather than using the postal system or fax machines (Vijayasarathy & Tyler, 1997). By replacing these communication nodes, EDI can reduce the time taken to exchange information between trading partners, and narrow the possibility of keying errors and inefficiencies (Ghobadian, et al., 1994).

Additionally, the use of EDI can expedite thousands of transactions in a very short period of time, reduce transmission costs, improve the accuracy of the information exchanged, reduce paper flow, improve business relationships, and eliminate labor intensive tasks (Angeles, Corritore, Basu & Nath, 2001; Holmes & Srivastava, 1999; Vijayasarathy & Robey, 1997; Vijayasarathy & Tyler, 1997, Hodgson, 1995; Ghobadian, et al., 1994).

In addition to the measurable benefits of EDI there are several indirect benefits. One of the benefits of EDI is the sharing of information. This is a sensitive issue with many organizations. However, if two or more organizations can find a way to trust each other, then the sharing of information will be much easier accomplish. The value of this type of relationship cannot be measured, but it is vital to the implementation, strategy, and effectiveness of an EDI program. There are three EDI system: batch, real time, and internet. They will each be discussed in the following sections.

**Batch EDI**

Batch EDI is still the most common and established approach that allows systems to talk to each other (see Figure 9). It relies on a “fire and forget” approach to an electronic mailbox or a point-to-point communications link. This method is ideal for regular flows of documents of a similar type. It can be set off as a nightly or even hourly task, and relies on only a minimal amount of initiation on the part of the operator. This system is ideal when there are high quantities of repetitive information (Hodgson, 1995).

In the purchasing industry, this basic form of EDI is commonly called “terminal to computer.” This form of EDI involves the seller placing a computer in the buyers office. The method was slow and tedious due to the fact that the buyer had to download...
data from his or her system and then upload it to the seller's computer (Giunipero & Sawchuk, 2000).

Figure 9. Batch Electronic Data Interchange (EDI).

**Real Time EDI**

Real Time EDI takes the idea of batched messages to the next level of sophistication and starts to integrate it with the other processes into the commercial environment (see Figure 10). It starts an elaborate cascade effect that initiates and automates other processes based on the requirements of the customer. For example, an EDI compatible system in a factory would be able to feed and extract information from an EDI database and build production schedules from incoming information. The schedule could be altered as more information was received and could generate EDI requests for components necessary to make the product. Last-minute changes could become last second changes with this type of EDI system. In this sophisticated aspect of EDI, the process can truly said to be customer-driven as bottle-necks in information flow are reduced (Hodgson, 1995). Another form of EDI that is commonly used is Buyer-Third Party via a Value Added Network (VAN)-Seller. This form of EDI uses a third party VAN that charges per EDI transaction. This service guarantees that the transactions will be compatible with multiple types of systems and be secure from computer hackers and other outside threats (Giunipero & Sawchuk, 2000).
**Internet EDI (Hyper Text Markup Language)**

Internet EDI (I-EDI) has an interactive capability that allows for a computer-based conversation to take the form of a virtual conversation. With I-EDI, a hub is created via the host’s website that interfaces with its applications and databases by using a common web browser and a trading partner. The data that flows between the website and the trading partner's browser that is in an EDI standard format (Hyper Text Markup Language). This allows any user with an EDI requesting system to interrogate a host system for specific types of information in real time (Ferguson, 1998; Hodgson, 1995). Bank of America (BOA) was one of the first companies to develop a pure I-EDI system with its partner Lawrence Livermore National Labs (Lankford & Johnson, 2000) (see Figure 11).

In the BOA Internet EDI system the process is continuous, but basically starts when Lawrence Livermore, a partner of BOA, converts its accounts payable files into EDI standard protocol ANSI X12 payment orders. The payment orders are routed through the Lawrence internet server, where the EDI messages enclosed in multipurpose internet mail extension (MIME) and sent via privacy enhanced mail (PEM) which is encrypted and sent via e-mail over the internet to BOA. The e-mail is authenticated by the BOA firewall to ensure that the messages have been properly encoded and verified. The secure Internet EDI server decrypts the messages and verifies that the digital signatures Lawrence applied are authentic. Passing inspection, the EDI messages are routed to the electronic commerce system translator, which translates the EDI messages into BOA-readable payment orders. The secure Internet EDI server does a series of edits on the EDI messages to ensure that they conform to the EDI protocol X12 standard. If they conform, a functional acknowledgment is encrypted and sent to Lawrence Livermore by BOA using the PEM/MIME standard.

Next, the second level of edits are performed by scanning each payment order in the file to ensure it has all of the proper data required to enable the bank to execute a payment instruction. Bank of America then debits Lawrence Livermore’s account and credits the accounts of the trading vendors. The entire process, from the time it takes Lawrence Livermore to send the EDI file to the point where BOA returns it, takes approximately four minutes (Smith-Bers, 1996).
Extensible Mark-up Language EDI

Electronic data interchange has stimulated a global think-tank with the goal of finding a better way to organize business information in a standard format that is secure, reliable, flexible, and inexpensive for all types of organizations that desire to exchange information over the internet (Lu, Tsai & Chou, 2001). As a result, several internet protocols and software languages have been developed such as Hyper Text Markup Language (HTML), Active X, Dynamic HTML, and Java (Otto, Cook & Chung, 2001). Even though HTML was an outstanding language for viewing, and printing documents over the world wide web, it was not a very good tool for exchanging business documents over the internet (Chang, 2000).

The extensible markup language (XML) was developed as an internet language that enables users to manipulate data via the internet. The primary advantage of XML is that it allows programmers to specifically define data and create XML documents for every thinkable purpose, and format (Erdmann, & Studer, 2000). Not only has XML caught the attention of Microsoft, Oracle, Netscape, Charles Schwab & Company, IBM, Macromedia, and Sun Systems; it has also been met with widespread approval in the internet language community (Gilmour, 2001; Kountz, 1998). In February 1998, the World Wide Web Consortium (W³C), an organization that sets internet standards, critically reviewed XML and decided to publish basic specifications for XML (XML 1.0) as an industry standard for document and data exchange in a variety of markets (Chang, 2000; Giunipero & Sawchuk, 2000; Kountz, 1998).
EDI Implementation Issues

Technologically, EDI requires hardware and software systems capable of capturing and moving information efficiently in an electronic format. By the 1980s, the development of software, coupled with the falling costs of computing, made EDI an increasingly attractive addition to the basic foundation of Supply Chain Management (SCM). Having EDI capabilities has become a prerequisite for dealing with a growing percentage of businesses (Abernathy, Dunlop, Hammond & Weil, 2000). Fortunately, the internet has enabled many companies to implement EDI with their customers, but the implementation of EDI in the retail industry is still far from becoming a standard system across firms (Lancioni, Smith & Olivia, 2000).

The effective execution of EDI implementation requires the alignment of both internal and external stakeholders. This goal is difficult to achieve for a number of reasons such as the temporal nature of business relationships, turnover, confusing direction from senior leadership, poor morale, and systematic layoffs (Emiliani, 2000). The common theme in the literature in terms of EDI implementation is that EDI has not lived up to its expectations and the companies that implement EDI do not take advantage of its full capabilities (Stefansson, 2002; Lu, et al., 2001; Kaefer & Bendoly, 2000; Lankford & Johnson, 2000; Holmes & Srivastava, 1999; Hunter & Valentino, 1995).

In the following sections, a historical review of SCM will be conducted along with a detailed review of the major components of a retail SCM strategy; quick response (QR). The QR strategy will be discussed because its implementation would be impossible without EDI (Fiorito, et al., 1998). This review will illustrate that EDI is a strategic component than can benefit most, if not all, business strategies.

Leadership & Electronic Data Interchange

Research has shown that EDI is a technology that has the ability to transform an organization’s supply chain making it more competitive and effective (Angeles, et al., 2001). Also, EDI requires top leadership support and a leadership style that involves fostering a positive environment, treating trading partners and subordinates with respect, and providing them with the information that will allow everyone to share the benefits reaped from EDI implementation (Angeles, Nath & Hendon, 1998; Bass, 1985). From the literature review, it was found that this management style is best described as a transformational leadership style.

Furthermore, the predominate leadership style used in the business industry has been described as the transactional leadership style (Popper & Zakkai, 1994). If the primary leadership style used in the retail industry is not compatible with the leadership style that is most often related to the implementation and use of EDI, then the benefits of EDI will not be obtained. Furthermore, if a retail organization wants to enjoy the benefits of EDI, then they may have to recruit and retrain leaders with a leadership style that is compatible to EDI implementation so that they are willing and able to realize the benefits obtained from the use of the information technology.
Perceived Benefits of Information Technology

The literature has indicates that the implementation of EDI is might be more related to leadership concerns and less related to cost, security, or compatibility issues. There is a growing trend that indicates the acceptance of information technology within an organization is more of a concern than the functionality of the information technology itself (Roberts & Henderson, 2000). In other words, information technologies such as EDI can only be effective if users accept them (Laitenberger & Dreyer, 1998). This acceptance is based on people’s attitude, behavior, and perception. Predicting a person’s perception and behavior is difficult. The theory of reasoned action is a popular theory that has enjoyed various levels of success at predicting consumer behavior. The success of this theory was part of the motivation to apply it to the world of technology acceptance. As a result, the technology acceptance scale was developed specifically to measure how an individual perceives information technology, such as EDI, and their acceptance and future use of it. To achieve a better understanding of the perceived benefits of information technology and its relation to the acceptance of it in the workforce, the following sections will review the following: theory of reasoned action, and the technology acceptance scale.

Theory of Reasoned Action

Ajzen and Fishbein (1975) developed the theory of reasoned action (TRA) for the purpose of explaining a consumer’s purchasing behavior. Since then, the TRA has enjoyed a high level of success in the field of consumer behavior (Sheppard, Hartwick & Warshaw, 1988). In addition to the model’s ability to predict consumer behavior and intentions, it also identifies where and how to target consumers’ behavioral change attempts (Sheppard, et al., 1988).

The history behind the formal study of consumer behavior dates back to the 1940’s. After WWII, there were several technological advancements that were developed to support the war effort. After the war, manufactures started flooding the market with new products from practically every industry. However, up to 80% of these new products failed to take hold as a result of consumer rejection (Sheth, 1967). This widespread rejection created a demand to study and predict consumer behavior. The TRA has been extensively tested due to its claims of predicting consumer behavior. A meta-analysis conducted by Sheppard, et al. (1988) concluded that the model performed extremely well in the prediction of goals and in the prediction of activities involving an explicit choice among alternatives. This was a key finding because these discoveries indicate that the predictive qualities of the TRA extend beyond the originally specified conditions of the model which is the prediction of behavior and not goal attainment (Sheppard, et al., 1988).

Technology Acceptance Scale

As a result of the developments from the TRA, the Technology Acceptance Model (TAM) was developed by Davis (1989). Davis believed that since the TRA was able to demonstrate an ability to predict behavior, that this theory could be expanded to
potentially measure attitudes and predict behavior in relation to the acceptance of various forms of information technology. He applied Fishbein and Ajzen's (1975) theory of reasoned action to show that beliefs influence attitudes which lead to intentions and therefore generate behaviors. Davis believed that user acceptance of IT is modeled through the TAM on this belief-attitude-intention-behavior relationship. Davis (1989) asserted that perceived usefulness and ease of use represent beliefs leading to such acceptance.

**Perceived Usefulness**

Perceived usefulness is defined as the degree to which a person believes that using a particular system would enhance his or her job performance (Davis, 1989). A system high in perceived usefulness is one that a user believes in the existence of a positive use-performance relationship. For this study, perceived usefulness represents a motivational factor that may lead to the acceptance of EDI acceptance or rejection. This factor is important because Davis (1989) found that perceived usefulness revealed a stronger and more consistent relationship with usage than did other variables reported such as attitudes, and satisfaction measures. Due to this consistent relationship between perceived usefulness and usage, this study will measure the leadership style of retail leaders to determine if there is a relationship between their leadership style and the perceived benefits of EDI.

**Perceived Ease of Use**

Perceived ease of use is defined as the degree to which a person believes that using a particular system would be free of effort (Davis, 1989). As stated earlier, the perceived benefits of a system is directly related to whether or not that system is acquired, used, and implemented to its fullest potential. The perceived ease of use, in many cases is a very important factor in determining if a system is implemented effectively or not (Goodwin, 1987). Additionally, Davis (1989) found that perceived ease of use may be an antecedent to perceived usefulness. With that said, the perceived ease of use will also be measured for the purpose of identifying a relationship between a retail executives leadership style and their perceived ease of use of EDI.

**Summary**

The purpose of this literature review was to highlight major leadership and management theories. The results of the review indicate that most leaders can be classified into two categories: transactional and transformational (Bass, 1985; Burns, 1978). Some of the goals of information technology are to improve an organization’s competitive advantage and effectiveness. There are several forms of information technology. Electronic data interchange is a form of information technology that is used with supply chain management (SCM) strategies such as quick response (QR) and just-in-time (JIT). Neither of these strategies can be implemented without the use of EDI and barcode technology.
There are implementation problems with QR, some of these have been traced to the leadership of retail organizations. Top leadership/management support is a critical factor for the implementation of this strategy and EDI (Angeles & Nath, 2000, Forza & Vinelli, 2000). Adoption of new information technologies, such as EDI, require the retail executives has a leadership style that is based on empowerment, teamwork, and trust (Kunz, 1995). Therefore, selecting leaders that view EDI in a positive light may benefit an organization’s ability to implement it successfully. If the leadership has a negative perception about EDI, then the strategy may suffer which might have a negative impact on the organization’s performance.

Electronic data interchange, leadership, and organizational performance form a triad (see Figure 12) in which one component relies on the other. In order to implement a new strategy, a new leadership style, in many cases, must also be implemented (Kunz, 1995). However, there are very few, if any, studies that have empirically tested whether or not a specific leadership style such as transformation or transactional is related to the perceived benefits of EDI.

This research will attempt to show that there is a positive and significant relationship between leadership style and the perceived benefits of EDI. Additionally, this research may highlight that perceptions of information technology in general may be a surrogate for the facts that are used to evaluate the pros and cons of information systems.

![Figure 12. The leadership support triad.](image-url)
CHAPTER III
METHODOLOGY

The purpose of this study is to determine if leadership style is related to the perceived benefits of electronic data interchange (EDI). The research questions for this research are as follows: 1). What is the relationship between leadership style and the perceived usefulness of EDI to retail executives? 2). What is the relationship between leadership style and the perceived ease of use of EDI to retail executives?

Hypothesis

H1: The perceived ease of use of EDI is negatively correlated with retail executives identified as having a transactional leadership style.

H2: The perceived ease of use of EDI is positively related with retail executives identified as having a transformational leadership style.

H3: The perceived usefulness of EDI is negatively correlated with retail executives identified as having a transactional leadership style.

H4: The perceived usefulness of EDI is positively correlated with retail executives identified as having a transformational leadership style.

Proposed Model

The proposed model for this study is based on the technology acceptance scale developed by Davis (1989). The goal of this model is to provide an explanation of the general leadership determinants that will hopefully explain and show a relationship between leadership style and the overall perception of EDI (see Figure 13).
Variables

The independent variables for this study will be leadership style. Additionally, the respondents’ demographics, and company size (based on the number employees) will be collected and analyzed. The dependant variable will be the perceived benefits of EDI as measured by the perceived usefulness and ease of use of EDI.

Sample

The sample for this study will consist of executives that hold leadership positions with various retail organizations throughout the United States. The executives will be selected from the current (2002) International Council of Shopping Center’s Directory. This directory contains the names, business addresses, and email addresses of mid-level and top executives of various retail organizations (retail stores, retail consultants, retail developers, etc.) from around the world. Within this directory, there were several company designators: Developer, Insurance, Lending Institution, Leasing Broker, Real Estate Broker, Consultant, and Retail. Each listing that was designated as retail was used for this study. This sample is not collected randomly.

Questionnaire Development

Fredrick Davis (1989) developed the TAS, which has two parts: perceived usefulness and perceived ease of use. Davis (1989) defines perceived usefulness as the degree to which a person believes that using a particular system would enhance his or her job performance; and defines perceived ease of use as the degree to which a person believes that using a particular system would be free of effort.

Davis (1989) tested and refined this scale and the final version had a reliability score of .98 for perceived usefulness and .94 for perceived ease of use. Furthermore, perceived usefulness was significantly correlated with self-reported usage ($r=.63$) and self predicted future usage ($r=.85$). Perceived ease of use was also significantly correlated...
with current usage ($r=.45$) and future usage ($r=.59$). Since the development of this scale, several researchers have used it and have found it to be a reliable method to test and predict future usage of information technology (Legris, Ingham & Collerette, 2002; Pijpers, et al., 2001; Anadarajan, et al., 2000; Roberts & Hederson, 2000).

The MLQ was developed by Bass (1985) and contains 45 questions that measure an individual’s transformational leadership and transactional leadership characteristics. The questions are subdivided into five parts that measure: charismatic leadership, individualized consideration, intellectual stimulation, contingent reward, and management by exception. Across the five sections of the MLQ, the reliability ranges from .71 to .91 and has been used in previous research (Bearden & Netemeyer, 1999). The MLQ was purchased from [www.mindgarden.com](http://www.mindgarden.com). For 100 copies the cost was $120.00, and for each copy thereafter the cost was $1.00. The MLQ has a copyright and therefore cannot be used for any purpose without the written permission of Mind garden.

**Data Collection Procedure**

The data for this study was gathered via the combined use of two extensively tested instruments: the technology acceptance scale (TAS), and questions from the multi-factor leadership questionnaire (MLQ) transcribed from the work conducted by Bycio, Allen & Hackett (1995). Additionally, demographic information (age, gender, job title, experience, ethnic code, size of organization) was collected from the retail executives that choose to participate in this study. These questionnaires were combined and administered online in accordance with the instructions outlined in Dillman’s (2000) book.

One thousand retail executives received an email letter (see appendix 1) notifying them that they have been selected to participate in a nation-wide study and their participation would be greatly appreciated. Two days after the email-letter was sent, they received an email labeled “Leadership” which contained a website link that directed them to the online survey. Within this email, they were given the option not to participate. The executives that exercised this option were tracked for the purpose of determining survey response percentages.

**Pilot Study**

A pilot study was conducted with seven retail executives. They were sent both surveys via email. The pilot study survey allowed for comments after each section (see appendices 3 & 4). The directions in the comment box asked the retail executives to identify any confusing questions or instructions.

**Data Analysis**

The Pearson Product Moment (PPM) correlation was used to determine the degree and/or magnitude of linear relationship between leadership style and perceived benefits of EDI. The PPM is the most commonly used of the correlation coefficients (Brewer, 1996). Due to the fact that this study is attempting to show a relationship between two variables, it was deemed that the PPM was a satisfactory tool to identify an
association between the two variables. A linear regression test was conducted to
determine the level of predictability for the relationships identified from the PPM.

Since the MLQ is widely used, factor analysis and reliability tests were also
conducted to determine the strength of each leadership section and potentially identify
questions of this survey that could be refined or eliminated. Descriptive statistics were
also calculated for this study. The statistical software program SPSS was used.

The inferential statistics were calculated on a hypothetical basis since the sample
collection method prevents any representation to a larger population. Inferential statistics
has four basic assumptions (Savage, 1957; Walsh, 1952):
   1. The totality of observations are statistically independent
   2. They all have the same variance
   3. They are all normally distributed
   4. The sample taken is random from a defined population

The above assumptions are simple and straightforward. However, violation of
one or more of these assumptions leads to a statistical conclusion that is not defendable or
valid (Ludbrook & Dudley, 1998; Savage, 1957, Walsh, 1952). Unfortunately, many
research projects violate one or more of these assumptions. For example, Ludbrook &
Dudley (1998) found that of the 252 studies they evaluated, 96% violated one or more of
the basic statistical assumptions. At a minimum, this study will violate assumptions 3 &
4. It is the researcher’s view that the scores will not be normally distributed, and as
stated earlier, the sample will not be random. Therefore, the findings revealed in this
research are limited to the retail executives that were sampled for this study and cannot
be used to infer conclusions about the population in general of retail executives. As a
result, it is a limitation of this study.
CHAPTER IV

RESULTS

The purpose of this study was to determine if leadership style is related to the perceived benefits of EDI in the retail industry. Three levels of leadership (senior, middle, and entry level) in various retail companies around the country were surveyed. The objectives of this study were to 1) examine the relationship between leadership style and the perceived usefulness of EDI to retail executives, and 2) examine the relationship between leadership style and the perceived ease of use EDI within the retail industry. The hypothesis for this study is as follows:

H1: The perceived ease of use of EDI is negatively correlated with retail executives identified as having a transactional leadership style.

H2: The perceived ease of use of EDI is positively related with retail executives identified as having a transformational leadership style.

H3: The perceived usefulness of EDI is negatively correlated with retail executives identified as having a transactional leadership style.

H4: The perceived usefulness of EDI is positively correlated with retail executives identified as having a transformational leadership style.

Pilot Study

A pilot study was conducted to determine if the questionnaire and pre-notice letter contained errors, questions, or directions that could be viewed as confusing or misleading. Four percent (43 executives) of the selected sample was randomly selected and sent questionnaires via email, of these, three failed for various technological reasons (incompatible software, firewalls, etc.). A total of seven executives responded. This was a response rate of 17.5%. Most of the input provided by the respondents was aimed at the pre-notice letter. The main concern was that they felt the letter should explain how their name and email address was selected, and if a fax could be sent instead of taking the survey online. One respondent suggested that the survey be divided into smaller groups. The pre-notice letter and the survey were revised based on these suggestions. Overall, there were no major content changes.
Sample and Survey Response Rates

A total of 1,000 individual emails were prepared for this study. The first step was to send out the pre-notice letter (see Appendix 1). After the pre-notice was sent, 168 emails failed to make it to their destination and seven people indicated, via return email, that they did not want to participate in the study. These emails were withdrawn from the main list. There were 19 typographical errors that were identified and corrected. The total number of surveys that were sent was 858. Eighty-four surveys came back as undeliverable due to email blocking technology for a total of 774 surveys that made it to their destination. Seventy-three people responded to the survey for a response rate of 9.4%. Forty eight hours later, a follow-up email (see Appendix 2) was sent to the people that did not respond and did not actively request not to participate. An additional 41 surveys were returned for a total of 114 responses (due to the short period of time between the first and second sending of the survey, it was determined by the researcher that a t-test would not be conducted to measure potential differences between the two groups). Of the 114, 12 respondents were deleted due to incomplete responses. This resulted in 102 useable responses for a total response rate of 13.18% (102 \( \div 774 = 13.18\% \)). Furthermore, an additional 12 respondents were deleted due to a lack of leadership experience resulting in 90 total usable surveys. None of the articles reviewed conducted an online survey using retail executives. However, research conducted with retail executives using paper surveys sent out in the mail resulted in a typical response rate between 25-28% (Pijpers, et al., 2001; Powell & Dent-Micallef, 1997). Due to the fact that the retail industry is extremely fragmented and has little information technology development as a whole (Powell & Dent-Micallef, 1997), this response rate was deemed acceptable for a study that requires various forms of information technology.

Description of Respondents

For this study, 90 useable surveys were obtained from retail executives. As identified in the survey, the leadership positions of the executives were divided into three categories: top, middle, and entry. Top-level executives (chief executive officer, presidents & business owners) represented 56.7% of the sample, middle level executives (regional director, executive director) represented 42.2%, and entry level (team leader, executive trainee) represented 1.1%. The size of the organizations was also divided into three categories: small, medium, and large. For this study, small companies represented 17.8% of the sample and were classified as having less than 100 employees, mediums companies represented 6.6% of the sample was has having between 100 to 500 employees, and large companies represented 75.6% of the sample was classified as having more than 500 employees. The years of work experience of the executives were divided into five categories: 1-3 years, 3-5 years, 5-10 years, 10-20 years, and 20+ years. The fourth category had the highest percentage of respondents at 36.7%. The lowest category was the second category at 5.6%. Both females and males participated in this study. Males represented 82.2% and females represented 17.8% (see Table 5).
Table 5. Description of Respondents. (n=90)

<table>
<thead>
<tr>
<th>Category</th>
<th>Response Percentage</th>
<th>Response Total</th>
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<td>1</td>
</tr>
<tr>
<td>Did not wish to provide</td>
<td>1.1%</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
<td>90</td>
</tr>
<tr>
<td><strong>GENDER</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>82.2%</td>
<td>74</td>
</tr>
<tr>
<td>Female</td>
<td>17.8%</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
<td>90</td>
</tr>
<tr>
<td><strong>YEARS OF EXPERIENCE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-20 yrs.</td>
<td>36.7%</td>
<td>33</td>
</tr>
<tr>
<td>20 yrs +</td>
<td>31.1%</td>
<td>28</td>
</tr>
<tr>
<td>5-10 yrs.</td>
<td>20.0%</td>
<td>18</td>
</tr>
<tr>
<td>1-3 yrs.</td>
<td>6.7%</td>
<td>6</td>
</tr>
<tr>
<td>3-5 yrs.</td>
<td>5.6%</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
<td>90</td>
</tr>
<tr>
<td><strong>LEADERSHIP POSITION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top (chief executive officer, presidents &amp; business owners)</td>
<td>56.7</td>
<td>51</td>
</tr>
<tr>
<td>Middle (regional director, executive director)</td>
<td>42.2</td>
<td>38</td>
</tr>
<tr>
<td>Entry (team leader, executive trainee)</td>
<td>1.1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
<td>90</td>
</tr>
<tr>
<td><strong>SIZE OF ORGANIZATION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large (&gt;500 employees)</td>
<td>75.6%</td>
<td>68</td>
</tr>
<tr>
<td>Small (&lt;100 employees)</td>
<td>17.8%</td>
<td>16</td>
</tr>
<tr>
<td>Medium (100 – 500 employees)</td>
<td>6.6%</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
<td>90</td>
</tr>
</tbody>
</table>

**Descriptive Statistics for the MLQ & TAS**

The participants were asked to fill out a questionnaire that would measure the leadership style they believed they possessed. The questionnaire used for this study was the Multi-Factor Leadership Questionnaire. The questionnaire measures a person’s tendency to practice a transformational or transactional leadership style. Transformational leadership questions are in the questionnaire are categorized as: Inspirational Motivation, Individual Consideration, and Intellectual Stimulation. The transactional leadership questions in the questionnaire have two categories: Contingent Reward and Management-By-Exception Active & Passive.

Additionally, the participants were asked to complete the technology acceptance scale. The scale is made up of two parts: ease of use and usefulness. The mean score for
the transformational scale was 4.33 and the standard deviation was .44. The mean score for the transactional scale was 2.92 and the standard deviation was .57 (see Table 6). The mean score for ease of use was 4.36 and the standard deviation was 1.51. For usefulness, the mean score was 5.16 and the standard deviation was 1.62 (see Table 7).

**Independent/Dependant Variables**

The independent variable for this study was leadership style. The two styles that were measured for this study were transformational and transactional leadership, which resulted in means scores of 4.33 and 2.92 (SDs= .44 and .57 respectively). For the dependent variables, the mean scores for ease of use and usefulness were 4.36 & and 5.16 (SDs= 1.51 & 1.62 respectively) (see Table 7).

**Reliability of Scales**

The Multi-Factor Leadership Questionnaire is made up of 5 sections: three for transformational leadership (Inspirational Motivation, Individual Consideration, and Intellectual Stimulation) and two for transactional leadership (Contingent Award & Management-by Exception: active & passive). The reliability scores generally accepted for this test ranged from .63 to .92 (Bass & Alavio, 2000), and in previous research the reliability scores ranged from .71 to .91 (Bearden & Netemeyer, 1999).

The reliability scores, using coefficient alpha were calculated for each scale. For the transformational scale, the alpha score was .78, and for the transactional scale was the alpha score was .60 (see Table 8).

Due to the fact that the reliability score for the transactional scale was lower than what was found in previous research, a detailed reliability analysis was conducted. The analysis revealed that the contingent reward section of the transactional portion of the MLQ was only .42. This factor was removed and recalculated. This resulted in a reliability score of .66 (see Table 9).

The technology acceptance scale is made up of two parts: Ease of use and usefulness. For the technology acceptance scale, the ease of use alpha score was .95 and the usefulness score resulted in an alpha score of .97 (see Table 10). These reliability scores are consistent with other studies that used this scale. Laitenberger & Dreyer, 1998 reported an alpha for of .82 for ease of use and an alpha score of .84 for usefulness. Furthermore, Davis (1989) reported an alpha score of .98 for usefulness and an alpha score of .94 for ease of use. Lastly, several researchers have used the technology acceptance scale and have found it to be a reliable instrument to test and predict future usage of information technology (Legris, Ingham & Collerette, 2002; Pijpers, et al., 2001; Anadarajan, et al., 2000; Roberts & Hederson, 2000).
Table 6. Descriptive Statistics Multi-Factor Leadership Questionnaire (MLQ)(n=90)

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contingent Reward</strong> (transactional leadership)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I express satisfaction when others meet expectations</td>
<td>4.53</td>
<td>0.66</td>
</tr>
<tr>
<td>I discuss in specific terms who is responsible for achieving performance targets</td>
<td>4.23</td>
<td>0.92</td>
</tr>
<tr>
<td>I make clear what one can expect to receive when performance goals are achieved</td>
<td>3.94</td>
<td>0.91</td>
</tr>
<tr>
<td>I provide others with assistance in exchange for their efforts</td>
<td>3.87</td>
<td>1.25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4.15</td>
<td>.58</td>
</tr>
<tr>
<td><strong>Management By Exception Active</strong> (transactional leadership)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I focus attention on irregularities, mistakes, exceptions, and deviations from standards</td>
<td>3.32</td>
<td>1.07</td>
</tr>
<tr>
<td>I concentrate my full attention on dealing with mistakes, complaints, and failures</td>
<td>2.53</td>
<td>1.20</td>
</tr>
<tr>
<td>I direct my attention toward failure to meet standards</td>
<td>2.14</td>
<td>0.99</td>
</tr>
<tr>
<td>I keep track of all mistakes</td>
<td>1.94</td>
<td>0.99</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2.48</td>
<td>.67</td>
</tr>
<tr>
<td><strong>Management By Exception Passive</strong> (transactional leadership)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I fail to interfere until problems become serious</td>
<td>2.46</td>
<td>1.05</td>
</tr>
<tr>
<td>I show that I am a firm believer in &quot;if it ain't broke, don't fix it.&quot;</td>
<td>2.40</td>
<td>1.08</td>
</tr>
<tr>
<td>I demonstrate that problems must become chronic before I take action</td>
<td>1.80</td>
<td>1.01</td>
</tr>
<tr>
<td>I wait for things to go wrong before taking action</td>
<td>1.79</td>
<td>0.76</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2.11</td>
<td>.70</td>
</tr>
<tr>
<td><strong>Inspirational Motivation</strong> (transformational leadership)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I talk enthusiastically about what need to be accomplished</td>
<td>4.47</td>
<td>0.58</td>
</tr>
<tr>
<td>I talk optimistically about the future</td>
<td>4.43</td>
<td>0.65</td>
</tr>
<tr>
<td>I express confidence that goals will be achieved</td>
<td>4.42</td>
<td>0.64</td>
</tr>
<tr>
<td>I articulate a compelling vision of the future</td>
<td>3.99</td>
<td>0.84</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4.16</td>
<td>.55</td>
</tr>
<tr>
<td><strong>Individual Consideration</strong> (transformational leadership)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I treat others as individuals rather than just as a member of a group</td>
<td>4.57</td>
<td>0.56</td>
</tr>
<tr>
<td>I consider an individual as having different needs, abilities, and aspirations from others</td>
<td>4.53</td>
<td>0.67</td>
</tr>
<tr>
<td>I help others to develop their strengths</td>
<td>4.30</td>
<td>0.68</td>
</tr>
<tr>
<td>I spend time teaching and coaching</td>
<td>4.27</td>
<td>0.76</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4.42</td>
<td>.46</td>
</tr>
<tr>
<td><strong>Intellectual Stimulation</strong> (transformational leadership)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I seek differing perspectives when solving problems</td>
<td>4.24</td>
<td>0.72</td>
</tr>
<tr>
<td>I get others to look at problems from many different angles</td>
<td>4.20</td>
<td>0.75</td>
</tr>
<tr>
<td>I re-examine critical assumptions to question whether they are appropriate</td>
<td>4.12</td>
<td>0.78</td>
</tr>
<tr>
<td>I suggest new ways of looking at how to complete assignments</td>
<td>4.06</td>
<td>0.81</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4.42</td>
<td>.46</td>
</tr>
</tbody>
</table>

N= 90. Each item of the Multifactor Leadership Scale was rated on the following 5-point scale. 1 (not at all), 2 (once in a while), 3, (sometimes), 4 (fairly often), 5 (frequently if not always).
Table 7. Independent & Dependant Variables (n=90)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transformational</td>
<td>4.33</td>
<td>.44</td>
</tr>
<tr>
<td>Transactional</td>
<td>2.92</td>
<td>.57</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dependant Variables</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usefulness</td>
<td>4.36</td>
<td>1.51</td>
</tr>
<tr>
<td>Ease of Use</td>
<td>5.16</td>
<td>1.62</td>
</tr>
</tbody>
</table>

N= 90. Each item of the Multifactor Leadership Scale was rated on the following 5-point scale: 1 (not at all), 2 (once in a while), 3, (sometimes), 4 (fairly often), 5 (frequently if not always).

The technology acceptance scale was rated using the following 7-point scale: 1 (not at all), .2 (small chance), 3 (maybe), 4 (neither), 5 (good chance), 6 (very good chance), 7 (definitely).

Table 8. Reliability Scales for the MLQ

<table>
<thead>
<tr>
<th>TRANSFORMATIONAL</th>
<th>Alpha Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspirational Motivation</td>
<td>.72</td>
</tr>
<tr>
<td>Intellectual Stimulation</td>
<td>.68</td>
</tr>
<tr>
<td>Individualized Consideration</td>
<td>.61</td>
</tr>
<tr>
<td>Total for Transformational</td>
<td>.78</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TRANSACTIONAL</th>
<th>Alpha Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management-By-Exception Passive</td>
<td>.69</td>
</tr>
<tr>
<td>Management-By-Exception Active</td>
<td>.49</td>
</tr>
<tr>
<td>Contingent Reward</td>
<td>.42</td>
</tr>
<tr>
<td>Total for Transactional</td>
<td>.60</td>
</tr>
</tbody>
</table>

Table 9. Reliability Scales for Transactional without Contingent Reward Factor

<table>
<thead>
<tr>
<th>TRANSACTIONAL</th>
<th>Alpha Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management-By-Exception Passive</td>
<td>.69</td>
</tr>
<tr>
<td>Management-By-Exception Active</td>
<td>.49</td>
</tr>
<tr>
<td>Total for Transactional</td>
<td>.66</td>
</tr>
</tbody>
</table>
Table 10. Reliability Scales for the Technology Acceptance Scale (TAS)

<table>
<thead>
<tr>
<th>TECHNOLOGY ACCEPTANCE SCALE</th>
<th>Alpha Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usefulness</td>
<td>.97</td>
</tr>
<tr>
<td>Ease of use</td>
<td>.95</td>
</tr>
<tr>
<td>Total for Technology Acceptance Scale</td>
<td>.95</td>
</tr>
</tbody>
</table>

Correlation Results for MLQ & TAS

The Pearson Product Moment Correlation was calculated for the Multi-factor leadership questionnaire (MLQ) and the technology acceptance scale (TAS) (see Tables 11-13). As outlined in Table 11, the matrix shows that there were low and negatives relationships between the transformational scale and the transactional scale. The scores ranged from -.015 to .025. This relationship is consistent with the literature (Bass & Alavio, 2000).

Table 11. Pearson Correlation Matrix for MLQ Leadership Categories (n=90).

<table>
<thead>
<tr>
<th></th>
<th>Contingent Reward (transactional)</th>
<th>Intellectual Stimulation (transformational)</th>
<th>Individualized Consideration (transformational)</th>
<th>Management-by-Exception Active (transactional)</th>
<th>Management-by-Exception Passive (transactional)</th>
<th>Inspirational Motivation (transformational)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contingent Reward (transactional)</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intellectual Stimulation (transformational)</td>
<td>.519**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individualized Consideration (transformational)</td>
<td>.519**</td>
<td>1.000**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management-by-Exception Active (transactional)</td>
<td>.115</td>
<td>-.015</td>
<td>-.015</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management-by-Exception Passive (transactional)</td>
<td>.002</td>
<td>-.071</td>
<td>-.071</td>
<td>.315**</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Inspirational Motivation (transformational)</td>
<td>.439**</td>
<td>.627**</td>
<td>.627**</td>
<td>.025</td>
<td>-.138</td>
<td>1.000</td>
</tr>
</tbody>
</table>

**Correlation is significant at the .01 level (2-tailed).
The relationship between the two factors of the TAS revealed a positive and significant relationship between *usefulness* and *ease of use*. The relationship between the MLQ and the TAS revealed a positive and significant correlation between *transactional leadership* and both *ease of use* and *usefulness*. The scores were .375 and .234 respectively. There was also a positive relationship between *transformational leadership* and *ease of use* and *usefulness*, but the relationship was not significant. The scores were .153 and .077 respectively with a score of .375 (see Tables 12 & 13).

**Table 12. Pearson Correlations with the Technology Acceptance Scale Variables.**

<table>
<thead>
<tr>
<th></th>
<th>Ease of Use</th>
<th>Usefulness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease of Use</td>
<td>1.000</td>
<td>.535</td>
</tr>
<tr>
<td>Sig. (2 tailed)</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Usefulness</td>
<td>.535***</td>
<td>.077</td>
</tr>
<tr>
<td>Sig. (2 tailed)</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>90</td>
<td>90</td>
</tr>
</tbody>
</table>

*** Correlation is significant and the .001 level

**Table 13. Pearson Correlations with MLQ & TAS.**

<table>
<thead>
<tr>
<th></th>
<th>Ease of Use</th>
<th>Usefulness</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>Transactional</td>
<td>.375</td>
<td>.234</td>
</tr>
<tr>
<td></td>
<td>Transformational</td>
<td>.153</td>
<td>.077</td>
</tr>
<tr>
<td>Sig. (1 tailed)</td>
<td>Transactional</td>
<td>.000**</td>
<td>.027*</td>
</tr>
<tr>
<td></td>
<td>Transformational</td>
<td>.151</td>
<td>.473</td>
</tr>
</tbody>
</table>

Key to significance tests *p<.05, p**<.01

**Factor Analysis**

A factor analysis was conducted on the MLQ. A factor analysis is a technique which can be used for analyzing the measurements made for a number of individuals on each number of “test variables,” with the focus being on the relationship between the variables (Ehrenberg, 1959). For this study, the factor analysis test was programmed to identify principle components with two factors. This confirmatory method was chosen because the MLQ has two factors (*transformational leadership* & *transactional leadership*), which were known before any research was conducted. The rotation method selected was varimax.

The result of the test revealed that the both forms (active & passive) of the management by exception (MBE) factor was heavily loaded under the transactional
category with a score of .813 for MBE active and .798 for MBE passive. However, the contingent reward factor did not load with the transactional factor. It loaded with the transformational factors even though it is a transactional leadership trait (see Table 14).

As a result of this finding, an additional factor analysis was calculated to identify any factor with an Eigenvalue greater than one. The result was the same. This finding is consistent with the results from other researchers that conducted a factor analysis on the MLQ (Bass & Alavio, 2000). For example, Bycio, Hackett, & Allen, 1995, conducted a confirmatory factor analysis on the MLQ with hospital nurses and found that contingent reward was highly correlated with transformational components.

### Table 14. Factor Analysis of the MLQ

<table>
<thead>
<tr>
<th>Factor</th>
<th>Transformation</th>
<th>Transactional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management By Exception Active</td>
<td></td>
<td>.813</td>
</tr>
<tr>
<td>Management By Exception Passive</td>
<td></td>
<td>.798</td>
</tr>
<tr>
<td>Contingent Reward</td>
<td>.705</td>
<td></td>
</tr>
<tr>
<td>Intellectual Stimulation</td>
<td>.944</td>
<td></td>
</tr>
<tr>
<td>Individual Consideration</td>
<td>.944</td>
<td></td>
</tr>
<tr>
<td>Inspiration Motivation</td>
<td>.785</td>
<td></td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component with two factors. Rotation Method: Varimax with Kaiser

### Linear Regression

The information in Table 15 presents the results from the linear regression of ease of use and transactional leadership with an F value of 14.42. The proportion of the variance that was explained by variations in the independent variable revealed that 13.1% of the variance was explained (adjusted R-square). Additionally, the t-value was significant with a value of 3.799 (at the .05 level or better) indicating that 95% level of confidence or better was achieved.

The results of the ease of use and transformational leadership did not result in a significant relationship (see Table 16). The F-value for this model was 2.099 with a t-value of 1.354. On the other hand, the information in Table 17 did reveal a significant relationship between usefulness and transactional leadership with a F value of 5.080 and a t-value of 2.254. The proportion of the variance that was explained by variations in the independent variable revealed that 4.4% of the variance was explained (adjusted R-square). The results in Table 18 did not reveal a significant relationship for the usefulness and transformational leadership model. The F-value was 5.18 with a t-value of .720.
Table 15. Hypothesis Tests for Ease of use x Transactional (Hypothesis one).

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Standard Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.375*</td>
<td>.141</td>
<td>.131</td>
<td>1.4043</td>
</tr>
</tbody>
</table>

a. predictors: (Constant), transactional

### ANOVA

<table>
<thead>
<tr>
<th>Mode</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>28.45</td>
<td>1</td>
<td>28.45</td>
<td>14.42</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>173.54</td>
<td>88</td>
<td>1.92</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>201.99</td>
<td>89</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), transactional, P<.001***

b. Dependant Variable: ease of use

### COEFFICIENTS

<table>
<thead>
<tr>
<th>Mode</th>
<th>Unstandardized Coefficient</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>.523</td>
<td>1.021</td>
<td>.512</td>
</tr>
<tr>
<td></td>
<td>transactional</td>
<td>1.316</td>
<td>.346</td>
<td>.375</td>
</tr>
</tbody>
</table>

a. Dependant Variable: ease of use, P<.001***

Table 16. Hypothesis Tests for Ease of use x Transformational (Hypothesis two).

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Standard Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.153*</td>
<td>.023</td>
<td>.012</td>
<td>1.4973</td>
</tr>
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a. Predictors: (Constant), transformational

### ANOVA

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<th>Mean Square</th>
<th>F</th>
<th>Significance</th>
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<td>89</td>
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a. Predictors: (Constant), transformational, P<.001***

b. Dependant Variable: Ease of Use

### COEFFICIENTS

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<th>Standardized Coefficients</th>
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a. Dependant Variable: Ease of Use, P<.001***
Table 17. Hypothesis Tests for Usefulness x Transactional (Hypotheses three).

**MODEL SUMMARY**

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<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Standard Error of the Estimate</th>
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a. Predictors: (Constant), transformational

**ANOVA b**

<table>
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<tr>
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<td></td>
<td></td>
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</tbody>
</table>

a. Predictors: (Constant), transactional, P<.001***
b. Dependant Variable: usefulness

**COEFFICIENTS**

<table>
<thead>
<tr>
<th>Mode</th>
<th>Unstandardized Coefficient</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Constant)</td>
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<td></td>
</tr>
<tr>
<td>transactional</td>
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<td>.880</td>
<td>1.151</td>
<td>.234</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

a. Dependant Variable: usefulness

Table 18. Hypothesis Tests for Usefulness x Transformational (Hypothesis four).

**MODEL SUMMARY**

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<thead>
<tr>
<th>Model</th>
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<th>R Square</th>
<th>Adjusted R Square</th>
<th>Standard Error of the Estimate</th>
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a. Predictors: (Constant), transformational

**ANOVA b**

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</thead>
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<td>Total</td>
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</tbody>
</table>

a. Predictors: (Constant), transformational
b. Dependant Variable: usefulness

**COEFFICIENTS**

<table>
<thead>
<tr>
<th>Mode</th>
<th>Unstandardized Coefficient</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Significance</th>
</tr>
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<tr>
<td>1 (Constant)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>transactional</td>
<td>3.944</td>
<td>.280</td>
<td>1.691</td>
<td>.077</td>
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<td></td>
<td></td>
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<tr>
<td></td>
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a. Dependant Variable: usefulness
CHAPTER V

DISCUSSION

The purpose of this study was to determine if leadership style is related to the perceived benefits of electronic data interchange (EDI) in the retail industry. To accomplish this, two questionnaires were used. The multifactor leadership questionnaire (MLQ), and the technology acceptance scale (TAS). The MLQ measures a person’s leadership style, as they perceive it. The TAS measures a person’s perceived benefit of information technology, in this case, electronic data interchange (EDI). The two surveys were combined and sent via email to 858 retail executives. A total of 90 surveys were returned and usable.

Demographics

The demographics of this study revealed that the predominate race and sex were white (91.1%) males (82.2%). Slightly over three-fourths (75.6%) of the companies were large (over 500 employees), and over one half (56.7%) of the respondents were in senior leadership positions (chief executive officers, regional directors, presidents, & business owners) with over two thirds (67.8%) of them reporting that they had 10-20+ years experience. This majority of the sample is unique in several ways. First, they were young in their careers at the beginning of the rapid technology expansion of the mid 1980’s. Second, they are currently part of an industry that has a reputation for not having technological sophistication (Powell & Dent-Micallef, 1997). However, of the 90 respondents 88 were required to use a computer, and navigate to an outside website, and complete an online survey for this study. The remaining two requested to take the survey via fax, but this was arranged via e-mail. This finding indicates that the reputation of the leadership in the retail industry may not be as technologically illiterate as reported in the literature in the 1990’s and warrants further study (Powell & Dent-Micallef, 1997; Hunter, & Valentino, 1995).

According to the literature reviewed, transactional leadership was cited as being the primary leadership style practiced in the business industry (Popper & Zakkai, 1994). However, for this study, the findings revealed that transformational leadership was the predominate leadership style. This finding supports the notion that the retail industry is a unique business industry as compared to other business industries. For example, industries such as banking, or transportation may have several layers of management, the retail industry is extremely fragmented, consisting of mostly single unit local competitors with little or no technological sophistication as well as giant chains with multiple units (Powel & Dent-Micallef, 1997).
Leadership & Management Findings

Pearson Product Moment Correlations were calculated to measure the direction and magnitude of the linear relation between leadership style and the perceived benefits of EDI. Additionally, a linear regression was calculated which provided evidence of a statistically significant relationship between leadership style and the perceived benefits of EDI. There was a positive correlation between transformational leadership (influencing major changes in the attitudes and assumptions of organization members) and the perceived benefits of EDI. This finding supports hypothesis two and four. Furthermore, there was a positive and significant correlation found between transactional leadership (exchange of rewards for compliance) and the perceived benefits of EDI. This finding did not support hypothesis one and three.

The fact that both transactional and transformational leadership styles were positively correlated in relation to the perceived benefits of EDI indicates that retail executives appreciate that EDI is a system that can help their organization. However, it also may indicate that the poor implementation rates of this system may be related to other factors that are not directly related to the benefits of EDI such as cost, compatibility, and security. Additionally, the correlation scores reveal that transactional leaders have a slightly higher significance to the perceived benefit of EDI as compared to transformational leaders. This finding supports the literature in that transactional leaders tend to focus on managing processes and keeping everything running smoothly in accordance with regulations (Popper & Zakkai, 1994; Yukl, 1994; Robbins, 1993).

Electronic Data Interchange Findings

The literature commonly indicates that senior leadership is responsible for the implementation of EDI through its strategic planning. This study showed that senior leadership in the retail industry perceived EDI to be a worthwhile system. Therefore, the main hurdle to its implementation in the retail industry may be related to other factors such as cost or security. Furthermore, the data shows that transformational leadership (influencing major changes in the attitudes and assumptions of organization members) was not significantly related to the perceived benefits of information technology. This is an interesting finding. From this data set, the predominant leadership style was transformational. Since this leadership style did not significantly correlate with the perceived benefits of EDI, then it may be a factor for why EDI is not being implemented at a rapid rate. Furthermore, transformational leaders may not view EDI as a system that will transform their organization. These findings suggest that leadership style is related to the perceived benefits of EDI and information technology in general.

Supply Chain Management Findings

In order for a supply chain to be effective, it requires top leadership support (Angeles & Nath, 2000; Forza & Vinelli, 2000). However, since there are several important components that make up the supply chain such as EDI, supporting the SCM strategy may not be enough. Top leadership must also support the internal components of a new strategy. This appears to be one of the problems with SCM in the retail
industry. Since senior leadership does not view EDI as a system that can transform an organization, but simultaneously strives to improve the supply chain this may indicate a unique phenomena that may be the root cause of EDI’s slow implementation.

The primary findings of this study reveal that transformational leadership is the most prevalent among senior leaders in the retail industry, and there is no significant correlation between transformational leadership and the perceived benefits of EDI. This may be due to the fact that many senior leaders feel or do not understand why EDI is a critical component of the modern supply chain. However, when looking at the supply chain as a whole component, the senior level leaders did not have any problem understanding the importance of a robust, effective, functional supply chain. It appears that the knowledge base of the entire supply chain is more prevalent than the vital components that make it up. For example, several senior leaders that did not wish to participate indicated that they did not know anything about EDI. Some of the comments received are as follows:

I would be happy to help you but why don’t you use real language used in the real world. What in the world is electronic data interchange… Come on guys let’s get real.

By electronic data interchange, I am making the assumption you are referring to email and the ability to transfer documents and files as attachments. If not, I don't know enough about it to answer any of the above questions.

Based on the findings of this study, it appears that education about the specific benefits of EDI need to be conducted with the senior leadership of an organization. Furthermore, any form of information technology must be presented in a manner that is compatible with the leadership style of the decision maker of that organization. Simply stating the big picture in terms of “the bottom line” may work in terms of personnel changes and long term strategies, but when dealing with information technology, the top level leaders must get more involved with the inner workings of the systems they believe will benefit their organization.

Multi-Factor Leadership Questionnaire (MLQ) Findings

Bass (1985) developed the MLQ to measure two forms of leadership which are transformational & transactional. Transformational leadership is made up of three components: inspirational motivation, intellectual stimulation, and individual consideration. Transactional leadership is made up of two components: management by exception and contingent reward. The results in Table 11 clearly show a positive and significant relationship with transformational factors. At first glance, it appeared that this was a result of the unique environment of the retail industry. However, this finding was consistent across a variety of sectors. For example, Bycio 1995, et al, tested the MLQ on over 1,300 hospital nurses and found that contingent reward was also highly correlated with transformational components. Yamnnmarino, Dubinsky, Comer & Jolson, (1997) conducted their research with a variety of sales forces in the eastern United States and
found that contingent reward was highly correlated with transformational leadership characteristics.

Looking at the reliability of the MLQ (see Table 8) shows that contingent reward had the lowest reliability score of .42. Contributing to the overall reliability score of .60 for transactional leadership. The contingent reward factor was removed which resulted in an increased reliability score of .66. To investigate this finding further, a factor analysis was conducted. As mention earlier, this resulted in contingent reward loading with transformation components.

This finding is contrary to the literature that states that contingent reward is a transactional leadership trait (Bass, 1985). Contingent reward appears to be a leadership trait that can be employed by both transformational and transactional leaders depending on the situation. For future research, anyone that plans on using the MLQ to test transformational and transactional leadership might consider conducting a factor analysis on the data from a pilot study and then take out or refine the contingent reward questions that correlate with transformational leadership traits. This extra step may result in stronger reliability scores and stronger project overall.

Limitations

Every study has limitations and this one is no exception. The first limitation is the self-assessment of the executives’ leadership styles and perceived benefit of EDI. For any self-assessment, the “halo effect” may affect the accuracy of the measurement scale. Future research in this area should use a measurement tool that allows subordinates to rate the leadership style of their leaders and their intent to implement EDI. Even though this full-range type instrument is very expensive and time consuming, it will compensate for the halo effect prevalent in self-assessment questionnaires. For example, in the following quote, a subordinate expresses his or her opinion about their company’s leadership towards EDI and Quick Response implementation. This type of evaluation may produce more accurate results.

I think our management is hesitant to implement any of this (even EDI) because of initial cost output (i.e., new terminal, training, etc.). I think they talk big about it with little or no actual plan to implement. Please bombard the CEO, and GMMs with positive information continuously! (Fiorito, et al., 1998, p. 244).

The second limitation is the lack of a random sample. Inferential statistics has four basic assumptions (Savage, 1957; Walsh, 1952):

1. The totality of observations are statistically independent
2. They all have the same variance
3. They are all normally distributed
4. The sample taken is random from a defined population

Assumptions 3 and 4 were violated for this study. Therefore, the statistical conclusions of the inferential statistics should be taken with caution. Future research should strive to attain a random sample, and use non-parametric statistics that do not have as many rigid assumptions.
Summary

The two leadership styles analyzed for this study were transformational and transactional. They were chosen because they are the most current styles researched and the body of knowledge supports the theory that most leaders fall into one of these leadership styles. Electronic data interchange (EDI) is not a new technology, but it is undergoing significant changes as a result of the increasing use of the internet.

As revealed in this study, EDI still has not reached the level of importance in terms of being a strategic asset within many retail organizations that are led by transformational leaders. It appears that EDI is still viewed as a difficult system for retail organizations to implement even though the benefits of this technology are well documented. Since most organizations desire a competitive advantage it is an interesting phenomena that EDI suffers from such a low implementation rate across the retail industry.

However, if an organization can overcome the hurdles to implementing EDI, then they may enjoy a sustained competitive advantage. As stated earlier, Mata et al. (1995) states that if an organization has an asset that is imperfectly mobile, then the organization will have a sustained competitive advantage (see Figure 8). Based on the results of this study, it appears that leadership style maybe the imperfectly mobile asset that is linked to the implementation of EDI. As a review, the following hypothesis were proposed for this study:

H1: The perceived ease of use of EDI is negatively correlated with retail executives identified as having a transactional leadership style.

H2: The perceived ease of use of EDI is positively correlated with retail executives identified as having a transformational leadership style.

H3: The perceived usefulness of EDI is negatively correlated with retail executives identified as having a transactional leadership style.

H4: The perceived usefulness of EDI is positively correlated with retail executives identified as having a transformational leadership style.

The finding of this research did not support H1 & H3, but it did support H2 & H4. Even thought H1 & H3 were not supported, they did result in significant relationships between the ease of use and usefulness of EDI and transactional leadership. On the other hand, there was a positive relationship between the ease of use and usefulness of EDI and transformational leadership.

Based on the research questions proposed for this study, transactional leadership had the strongest relationship to the perceived usefulness and perceived ease of use of EDI to retail executives. Similarly, there was a positive relationship associated with transformational leadership, but the relationship did not support the hypothesis of this study. Overall, both research questions were answered by identifying the strength and direction of the leadership styles measured for this study and their relation to the perceived usefulness and perceived ease of use of EDI to retail executives.
In terms of the questionnaires used for this study, the multi-factor leadership questionnaire (MLQ) and the technology acceptance scale (TAS) both proved to be reliable instruments. The instruments were very easy to understand and there were no suggestions for improvements based on the results of the pilot study. However, the MLQ was not free and the company that sells the MLQ monitors how the instrument is used and the number of times it can be used. Due to the fact that this study was conducted online, an agreement was made that at the conclusion of the study the calculation of payment would be conducted. This is an important budget concern for future studies that may want to use this and other similar instruments.

Conducting an online study was a practical means for collecting data. In addition to the time and cost savings aspect of online surveys, the overall accuracy of the data collected was very beneficial. There was a seamless transfer from the respondent’s answers directly to the SPSS spreadsheet. With the exception of the two respondents that requested a paper survey, every aspect of the survey and data analysis was created and maintained in a digital paperless format. This procedure significantly reduced errors usually associated with the manual input of survey responses into a statistics program or spreadsheet.

There are several future directions that could be explored as a result of the findings revealed. First, there was a very low response rate for minorities (8.9%) and women (17.8%) for all leadership categories. This finding is not consistent with the literature. For example, Gable, Fiorito, and Topel (1993) found that in department store retailing, women constitute 67 percent of all lower-level management positions, 41 percent of all middle-levels positions, and 21 percent of all upper-level positions. A future study may want to investigate the gender and racial makeup of leadership and management positions in the retail industry as a whole. Additionally, more research needs to be conducted with the senior leadership within the retail industry and its relation to information technology. As stated earlier, the primary leadership style for this study was transformational leadership, but the only significant finding was between transactional leadership and the ease of use and usefulness of EDI.

Lastly, the bachelor degree was the primary education level attained for the respondents in this study. Since most of the respondents were in top-level leadership positions, looking at how education relates to the use and implementation of information technology in the retail industry would also be a worthwhile venture.
APPENDIX A

EMAIL PRE-NOTICE LETTER
Hello __________,

A few days from now you will receive an E-mail labeled “Leadership” requesting you to fill out a brief questionnaire for an important nationwide research project being conducted at The Florida State University. Your name was selected from the 2002 International Council of Shopping Centers Directory and your participation would be greatly appreciated.

Within this email, you will be asked to click on the website link: www.surveymonkey.com. The name may seem a little different, but this Internet survey company is professionally managed and operated. Once you click on this website you will be taken directly to the survey which should take approximately 5 minutes to complete. If you want the survey faxed to you just provide us with the phone number, via email, and it will be sent immediately.

The study will focus on leadership style and the perceived benefits of information technology. An in-depth knowledge of information technology is not a requirement for this study due to the fact that only your perception of it will be measured.

I am writing in advance because we have found many people like to know ahead of time that they will be contacted. This study will prove to be very beneficial to businesses because it will shed light on the various problems associated with the purchase and implementation of information technology.

Thank you for your time and consideration. It is only with the generous help of people like you that our research can be successful. If you have any questions, please call Todd McAllister at 850-212-4706 or the Florida State Human Subjects Committee at 850-644-8673.

As a token of our appreciation, all participants will receive an email copy of the final results.

Sincerely,

Todd McAllister
Doctoral Candidate, Merchandising
Florida State University
Hello__________,

This is a follow-up email. We are still conducting a nationwide leadership study. Your participation would be greatly appreciated. Please use the link below. Prior links will not work.

Here is the link to the survey:

Thank you very much for your participation,
Todd

Please note: If do not wish to receive further emails from us, please click the link below, and you will be automatically removed from our mailing list.
Leadership has become a very important issue in today's business world. Your responses will be added to a body of knowledge aimed at providing solutions to organizational issues. If you wish to print your questionnaire, please send it to the enclosed address. This entire survey should take approximately 5 minutes to complete.

1. DIRECTIONS: This questionnaire will describe your leadership style as you perceive it. Please answer each question by using your mouse to click on your choice. If you make a mistake, click on the correct choice and the previous answer will disappear. After answering the questions please click the word "NEXT>>" below to continue. Thank you.

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<th>Sometimes</th>
<th>Fairly often</th>
<th>Frequently, if not always</th>
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<tr>
<td>1. I provide others with assistance in exchange for their efforts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I re-examine critical assumptions to question whether they are</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
LEADERSHIP AND INFORMATION TECHNOLOGY QUESTIONNAIRE REQUESTED BY:

JOHN DOE

Fax Number:                Return Fax Number:

From:

Subject:

Pages: 5

Directions: When you fax this questionnaire back please be sure to cross out your name. Only group finding will be reported. Additionally, if you prefer to send this survey via postal mail, please send it to the following address: Todd McAllister, 2626 East Park Ave. #9101, Tallahassee, Florida 32301. Thank you.

The purpose of this questionnaire is to describe your leadership style as you perceive it. Please circle the appropriate response and answer all questions. Within this survey, the work “others” may mean your peers, clients, supervisors, etc. This part of the survey should take approximately 3 minutes. Please use the following rating scale:

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<th>NOT AT ALL</th>
<th>ONCE IN A WHILE</th>
<th>SOMETIMES</th>
<th>FAIRLY OFTEN</th>
<th>FREQUENTLY, IF NOT ALWAYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

1. I provide others with assistance in exchange for their efforts-----------------------1 2 3 4 5
2. I re-examine critical assumptions to question whether they are appropriate-------1 2 3 4 5
3. I fail to interfere until problems become serious---------------------------------------1 2 3 4 5
4. I focus attention on irregularities, mistakes, exceptions, and deviations from standards---------------------------1 2 3 4 5
5. I seek differing perspectives when solving problems---------------------------------1 2 3 4 5
6. I talk optimistically about the future----------------------------------------------------1 2 3 4 5
7. I discuss in specific terms who is responsible for achieving performance target---------------------------------------------------------------------------------------------1 2 3 4 5
8. I wait for things to go wrong before taking action-------------------------------------1 2 3 4 5
9. I talk enthusiastically about what needs to be accomplished ------------------------1 2 3 4 5
10. I spend time teaching and coaching----------------------------------------------------1 2 3 4 5
11. I make clear what one can expect to receive when performance goals are achieved---------------------------------------------------------------------------------------------1 2 3 4 5
12. I show that I am a firm believer in "if it ain't broke, don't fix it." --------------------------1 2 3 4 5
13. I treat others as individuals rather than just as a member of a group-------------------1 2 3 4 5
14. I demonstrate that problems must become chronic before I take action

15. I concentrate my full attention on dealing with mistakes, complaints, and failures

16. I keep track of all mistakes

17. I articulate a compelling vision of the future

18. I direct my attention toward failure to meet standards

19. I consider an individual as having different needs, abilities, and aspirations from others

20. I get others to look at problems from many different angles

21. I help others to develop their strengths

22. I suggest new ways of looking at how to complete assignments

23. I express satisfaction when others meet expectations

24. I express confidence that goals will be achieved

Electronic Data Interchange is a system that transfers business documents electronically from or within firms via the Internet or a value added network. The benefits of EDI are as follows: It reduces errors, improves customer service, reduces paper work, saves money, and increases organizational performance. This section will measure your perceived benefits of electronic data interchange. Please read and answer each question carefully using the following scale.

1. Using electronic data interchange in my job would enable me to accomplish tasks more quickly

2. Using electronic data interchange would improve my job performance

3. Using electronic data interchange in my job would increase my productivity

4. Using electronic data interchange would enhance my effectiveness on the job

5. Using electronic data interchange would make it easier to do my job

6. I would find electronic data interchange useful in my job

7. Learning to operate electronic data interchange would be easy for me

8. I would find it easy to get electronic data interchange to do what I want it to do

9. My interaction with electronic data interchange would be clear and understandable

10. I would find electronic data interchange to be flexible to interact with

11. It would be easy for me to become skillful at using electronic data interchange

12. I would find electronic data interchange easy to use
DEMOGRAPHIC INFORMATION: Please “circle” the most appropriate answer. This section should take approximately 1 minute.

1. What is the size of your company?
   a. Small Company (fewer than 100 employees)
   b. Medium Company (101 - 500 employees)
   c. Large Company (more than 500 employees)

2. What is your position in the company?
   - Top Level Leadership (CEO, President, VP, etc.)
   - Mid- Level Leadership (Regional Director, Executive Director, etc.)
   - Entry Level Leadership (Team Leader, Executive Trainee, etc.)
   - Non-Leadership Position

3. How many total years have you been in a leadership position (including other jobs)?
   - 0-1 yrs
   - 1-3 yrs
   - 3-5 yrs
   - 5-10 yrs
   - 10-20 yrs
   - 20 yrs +

4. Are you a female or Male?
   - Male
   - Female

5. What is the highest formal education you have attained to date?
   - High School
   - Some College
   - Bachelor Degree
   - Master's Degree
   - Doctoral Degree

6. What is your race or ethnic origin?
   - American Indian or Alaskan Native
   - Asian
   - Black, Not of Hispanic Origin
   - Do not wish to provide
   - Hispanic
   - Pacific Islander
   - White, Not of Hispanic Origin

You have completed this survey. Please fax this questionnaire back to the return fax number listed above. Thank you very much for your participation.
APPENDIX F.

HUMAN SUBJECTS APPROVAL MEMO.
Office of the Vice President
For Research
Tallahassee, Florida 32305-2763
(850) 644-8873 • FAX (850) 644-4392

APPROVAL MEMORANDUM
Human Subjects Committee

Date: 10/26/2002
Tedd L. McAllister
3226 E. Park Ave Ste 101
Tallahassee FL 32301

Dept.: Textiles and Consumer Science

From: David Quednau, Chair

Re: Use of Human Subjects in Research
Management Style and Its Relation To The Perceived Benefits Of Information Technology

The forms that you submitted to this office in regard to the use of human subjects in the proposal referenced above have been reviewed by the Secretary, the Chair, and two members of the Human Subjects Committee. Your project is determined to be exempt per 45 CFR § 46.101(b) 2, and has been approved by an accelerated review process.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals, which may be required.

If the project has not been completed by 10/27/2003 you must request renewed approval for continuation of the project.

You are advised that any change in protocol in this project must be approved by resubmission of the project to the Committee for approval. Also, the principal investigator must promptly report, in writing, any unexpected problems causing risks to research subjects or others.

By copy of this memorandum, the chairman of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols of such investigations as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Protection from Research Risks. The Assurance Number is IRB02000345.

Cc: Dr. Susan Fiorito
HSC No. 2002.485
REFERENCES


Porter, M.E. (1986). Why U.S. business is falling behind; the country is investing too little in the technology facilities, and education it needs in today's markets. *Fortune, 113*, 225.


BIOGRAPHICAL SKETCH

Todd McAllister was born 8 November 1966 in San Francisco, California. He has earned a Bachelor of Arts degree in Industrial/Organizational Psychology from Western Washington University located in Bellingham, Washington and a Masters of Arts degree in Management from Webster University Located in St. Louis, Missouri.

From 1991 to the present, Todd McAllister serves his country as a commissioned officer in the United States Marine Corps. His military occupational specialties are as follows: supply officer, logistics officer, and command and control systems coordinator. Todd McAllister’s career path spans across the United States and Japan. Currently, he is a logistics strategist at Headquarters Marine Corps located in Washington, DC.

Todd McAllister’s hobbies are mountain bike riding, cave diving, and fishing. He is not married and has no kids.