

# IS THE CIO THE “LAST AMONG EQUALS”? STUDENTS’ PERCEPTIONS OF THE STEREOTYPE PROFILES OF CIOs, CFOs, AND CMOs

*Completed Research Paper*

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## **Abstract**

*Since the origin of the IT executive role in organizations, researchers have often emphasized the ambiguous and challenging role that CIOs face in organizations. While some argue that CIOs embrace new leadership roles in their organizations and suggest that CIOs should mean “Chief Influential Officers”, many others argue the opposite and even refer to the term CIO as the “Career Is Over”. We argue that these roles may be influenced by the existence and potentially persistence of distinct stereotype profiles at the C-suite level. This paper explores business students’ perceptions of CIOs in comparison with CMOs and CFOs. Our results suggest that business students enter their professional careers with well-defined stereotype profiles of business leaders and that these leaders are seen as distinct on two important leadership domains – social and dominance leadership. There are also indicators that some business leaders share more perceived leadership traits than others. Such similarities and differences in leadership profiles may have important implications for the role of the CIO in organizations.*

**Keywords:** CIOs, IT/business relationships, perceptions gap, IT stereotype, IT/IS management

## **Introduction**

Much has been written by IS researchers and practitioners about the challenges faced by the senior IT executive (i.e., CIOs) and the role of the IT function in organizations (e.g., Banker et al. 2011; Chen et al. 2010; Peppard 2010, 2011; Tallon 2013). One such challenge is the apparent disconnect between the burgeoning importance of information technology to the success of organizations and the relegation of CIOs to tactical rather than strategic roles<sup>1</sup> in their organizations (CIO magazine 2012; Tallon 2013). And despite the fact that CIOs are increasingly gaining access to the “C-suite”, studies (e.g., Peppard 2010, Peppard 2011) continually mention the lack of credibility of CIOs as business leaders. Such studies refer to CIOs with “voices” that go unheard despite occupying a seat at the senior management table (e.g., Kaarst-Brown 2005). In an earlier study, Hirschheim et al. (2003) found that, despite ample evidence to the contrary, the CIO (and the overall IT function) were considered ineffective and overly costly whereupon the CEO reduced support and resources for the IT department that inhibited the role that IT was allowed to play with a corresponding reduction in IT-enabled value. This phenomenon, often referred as the “perception gap”, is manifest in the mismatch between the expectations and beliefs about the IT function possessed by individuals inside with those outside the IT organization (e.g., Hirschheim et al. 2003; Peppard 2001). Our attempts to explain this phenomenon such as IT alignment and strategic business partnerships (e.g., Reich and Benbasat 2000; Tallon et al. 2000) have met with limited success. The fact remains that, after fifty years, the gap still persists. A possible anecdotal explanation for the persistence of this gap may be the existence of broadly-based stereotypes.

There is ample anecdotal evidence referring to the existence of an IT stereotype (e.g., Garcia-Crespo et al., 2008; Leidner et al., 2013; Peppard 2010; Pflieger and Zetlin 2006; Willcoxson and Chatham 2006). This evidence suggests that, not only does this IT stereotype exist; but that it exists at the highest levels of the organization where key decisions are made regarding the role of IT. The existence of such an occupational stereotype is important to understand because research has repeatedly shown that “people act in accordance with their stereotypes” (i.e., stereotyping, profiling) (Bielby 2000; Wheeler et al. 2001). For example, if people believe that “CIOs are not strategic thinkers”, then they are not likely to appoint them to lead a new strategic initiative. Another important concern about stereotypes is their persistence. Here, the weight of evidence suggests that stereotypes are difficult to change and it also suggests (Fishman 1956; Schneider 200) that occupational stereotypes are formed early in high school (Hind et al. 2003; Kirkham et al. 2002).

In an attempt to understand the low enrollment of undergraduate students in IS majors, Tu and McKeen (2011) used a 22-item bipolar scale of adjectives (e.g., “active-passive”) to examine undergraduate business students’ perceptions of three different professions: marketing, finance, and IS. Different profiles emerged for each profession following a classical stereotypical view; that is, profiles were taken to the extreme (e.g., marketers were trendy, IT professionals were nerdy). These results were expected for freshmen students given their limited life and work experience. But surprisingly, these stereotypical profiles did not change over the student’s four years of their business program. Despite taking advanced courses in different areas of specialization, working in summer-internships and being forced to make career decisions, students’ stereotypes remained inviolate.

These preliminary results seem to confirm the persistence of occupational stereotypes over time and despite individuating evidence (e.g., knowing someone in IS who is trendy). They also suggest that students enter their professional life armed with stereotypical beliefs that likely influence their inter-professional interactions (Carpenter 1995a, 1995b; Hean et al. 2006). Extending these findings to organizations leads us to suspect that CIO participation, contribution and involvement in senior management decision-making may depend on the role of perception at this C-suite level. Although we recognize that the actual contribution of CIOs is a function of their unique abilities and skills as senior business leaders, research and anecdotal evidence shows that their contribution and involvement greatly

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<sup>1</sup> In some organizations, CIOs’ responsibilities rely solely on “keeping the lights on” or in tactical duties. For instance, these CIOs can easily find themselves clinging too tightly to technology matters (e.g., decisions about REST vs SOAP), and lose sight of what the business strategy really is. This happens because the CIO either chooses to do so or is subject to do so.

depends on the opportunities that are made available to them. And this is a matter of equality perceptions. That is, if CIOs are viewed as “last among equals”, they would tend to be relegated to more tactical roles than strategic roles in the organization.

Numerous studies have also shown that occupational stereotypes play a significant role in decisions related to performance evaluations, allocation of resources, hiring, and interprofessional interactions in organizational settings (Schneider 2004). However, with respect to the leadership role that CIOs play in organizations, little is known to date whether business students entering professional life hold stereotypical perceptions of CIOs and whether there are differences and similarities between their stereotype profile and other C-level members. We build on stereotype theory to examine students’ perceptions of the stereotype profiles of CIOs. Given that stereotypes are assessed relative to well-defined categorizations (e.g., men versus women, Hispanic versus Asian), we contrast CIOs to two other well-known professional roles – CFOs (chief financial officers) and CMOs (chief marketing officers). That is, CIOs may be considered “detail-oriented” but, in order to make sense of this, we need to know the comparison group. The findings presented in this paper are the baseline data and analysis part of a longitudinal cohort study which is assessing the content, persistence and impact of the CIO stereotype profile over time.

In the next section, we present our research questions. We then outline the study’s theoretical perspectives, and review prior studies and anecdotal evidence of the CIO stereotypical profile. Next, details of the research methodology are presented. Our results are then presented and discussed. The paper concludes by outlining the study’s contributions and suggestions for future research.

## Research Questions

Two research questions frame our study:

- Do undergraduate business students hold stereotype profiles of CIOs? If so, how does this profile differ from other C-suite members?
- What are the salient personality and behavioral (i.e., stereotypical beliefs) traits that best discriminate CIOs from other C-suite members ?

## Theoretical Background

### *Stereotype Theory*

There is an extensive literature on stereotypes within Social Psychology that defines stereotypes as “social categorical judgment(s) ... of people in terms of their group memberships” (Turner 1999, p. 26). Stereotyping is a cognitive process that helps individuals simplify a complex world (Dovidio et al. 1996). Hinton (2000) describes three elemental aspects of stereotyping. First, rather than treating individuals as idiosyncratic, it is cognitively simpler to treat them as members of a social category (e.g., gender, nationality, race, occupation) – thus lawyers can be differentiated from everyone who is not a lawyer. Second, other (stereotypical) traits are associated with the members of the identified social category. For example, IT professionals may be perceived as nerdy. Third, when an individual is placed in a social category or group, stereotypical traits are attributed to that person. Hence, if a person is identified as an IT worker, an immediate reaction is to assume that he or she is nerdy. Therefore, stereotypes are formed from the set of traits that are automatically associated with members of an identifiable social category or group.

Two important concepts are examined within the stereotype literature: the “prototype” and the “schema”. The “prototype” of a particular class of objects or individuals is the “model” of that object or person that comes to mind as the best representation of the object or individual (Mervis and Rosch 1981). Everyone’s prototype is likely to be different: one person’s prototype doctor, for instance, may be an actual doctor, whereas another’s may be a fictional doctor, or a character in a TV show. A “schema” refers to the structure of our knowledge and beliefs about a particular concept (such as a type of object or person). Our schemas help us recognize, interpret and label stimuli; that is, “they enrich our understanding of the

world” (Oakes and Turner 1990). We may form schemas about occupational roles, such as that of a doctor, accountant, or IT person. The schema will include traits that we attribute to a particular professional, for example, dullness can be applied to an accountant. Expectations of behavior are also a characteristic of schemas, for example, accountants are dull and keep tight control over expenses. These concepts reinforce how stereotypes serve as an “interpretative framework by which we can explain the behaviors of others” (Hinton 2000, p. 95).

Earlier studies on stereotyping portrayed stereotypes as false and potentially dangerous against a group, thereby associating stereotypes with prejudice (Brighman 1971; Schneider 2004). However, current studies have demonstrated that stereotyping is a natural cognitive process (Haslam et al. 2002) and one that may have both positive and negative outcomes. On the positive side, individuals may use their preconceived stereotypes to guide their intergroup behaviors. For example, in the healthcare area, stereotyping has been identified as a factor that helps health practitioners cope with the demands placed upon them during their interactions with both the patient and the employing organization (Kirkham et al. 2002). For example, the healthcare professionals’ generalized views of a particular patient group may guide the professional in an appropriate manner when dealing with a patient belonging to a particular group for the first time (Hean et al. 2006).

However, stereotypes may also generate false or negative expectations of another group’s attitudes or behaviors. It is possible that these negative expectations of a group create a reality through the process of self-fulfilling prophecy<sup>2</sup>. (Hilton and Von Hippel 1996); that is, an action taken on the basis of a stereotypical view of an individual or group leads to consequences that reinforce the stereotype. For example, those recruiting may have a stereotypical view of a specific profession and consequentially may favor or disfavor candidates possessing such stereotypical attributes. For instance, those possessing stereotypical beliefs of IT professionals as nerdy and socially inept may select candidates possessing these traits or expect IT professionals to behave in accordance, thereby reinforcing the stereotype.

Stereotypes have been well-studied in the workplace (e.g., Falkenberg 1990; Heilman 1995). Managers have been shown to use stereotypes to judge or evaluate others unless other informational or situational conditions are met (Fisk and Neuberg 1990). These managers apply stereotypical beliefs to the disadvantage of demographic groups when predicting the possible success of a candidate during hiring, promoting, or evaluating performance. The “glass ceiling” is a classic example of the barriers that keep minorities and women from advancing up the corporate ladder, regardless of their qualifications or achievements (Cotter et al. 2001). Because performance evaluations are linked to compensation, promotion, and vulnerability to downsizing, there are substantial consequences to unfair or biased evaluation when managers activate and behave in accordance with their stereotypes (Bielby 2000), which are often developed and employed subconsciously.

### ***Stereotype Rigidity***

Numerous studies have demonstrated that stereotypes are rigid and resistant to change (Fishman 1956). Johnson (1996) affirms that an important factor in this is the inclination of those holding stereotypes to give greater weight to cases that confirm their stereotypes than to cases that appear to counter their stereotype. In the recruiting example above, if a recruiting firm encounters a candidate that challenges the stereotype (e.g., extrovert and excellent at words), the candidate may be identified as a “subtype” rather than leading to a revision of the stereotype (Kunda and Oleson 1995). For example, if the standard stereotype of IT professionals is that they are shy and introverted, the existence of some “extrovert” IT professionals may not lead to a general reconsideration of the stereotype. Instead, these individuals will either be positioned in a subtype, leaving the existing IT stereotype unchanged, or will not be perceived as being “real” IT people at all.

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<sup>2</sup> Businessdictionary.com defines the self-fulfilling prophecy as any positive or negative expectation about circumstances, events, or people that may affect a person's behavior toward them in a manner that causes those expectations to be fulfilled.

## **The CIO role**

Many business titles have been applied to the most senior IT executive. According to the 2012 “State of the CIO” survey (CIO magazine 2012), 53 percent of the heads of IT hold a CIO/CTO<sup>3</sup> title, 27 percent hold “general manager/managing director/director titles, and even other titles remove the terms technology or information such as “vice president of services” (20 percent). Yet, the CIO title remains the most widely accepted for the organization’s senior IT executive.

As a senior IT executive, the CIO is expected to fulfill several roles: being a business leader, being a relationship builder, and shaping the organization’s strategy (Banker et al. 2011). That is, the CIO is expected to help the organization create value by increasing the strategic vision of the top management team. Researchers even suggest that the CIO should mean “chief influential officer” (Broadbent and Kitzis 2005; Karahanna and Chen 2006 in Banker et al. 2011). The CIO has even been nominated as an attractive candidate for the CEO position (Polansky et al. 2004). While some CIOs have been able to meet the above-mentioned expectations and demonstrated IT value in their organization, others have struggled in this endeavor and are still perceived as service providers or technology collaborators<sup>4</sup>. Surely there must be a link between these mixed perceptions of the CIO and the role that CIOs (and the IT organization) assume within their organizations.

Researchers often refer to the existence of the IT stereotype (e.g., Garcia-Crespo et al., 2008; Leidner et al., 2013; Peppard 2010; Pflieger and Zetlin 2006; Stewart 2002; Willcoxson and Chatham 2006). These references are largely anecdotal but their frequency underscores the presence and impact of the IT stereotype at different levels of the organization. Gonzalez et al. (2012) discuss the positive and negative aspects of the stereotype at the managerial level by summarizing academic and practitioner literature (see Table 1). They found that the negative aspects of the stereotype rely on the general (but untestable) perception that CIOs lack leadership skills, are not strategic in their orientation, and have limited credibility with business stakeholders. These perceptions have also been reported elsewhere (Peppard 2010, Peppard et al. 2011). Peppard et al. (2011) posit that the bottom line of these mixed perceptions towards the CIOs’ role, job tasks, reporting relationships and their expectations is the bipolar belief of executives towards the IT organization. At one end is the belief that IT is a cost center; at the other, IT offers significant strategic opportunities. These beliefs have been transferred to the role of CIOs making their roles more ambiguous.

In order to clarify this ambiguity, recent research explores the personal competencies of successful CIOs and advocates that CIOs need to take a more proactive leadership role in their organizations (Enns et al. 2007; Mark and Monnoyer 2004; Peppard 2010). Peppard et al. (2011) suggest that possessing leadership competencies is only one side of the equation. They state that “[it] is assumed that if incumbent CIOs possessed these competencies, they would be successful. But aren’t these competencies generic and required by all senior executives?” (Peppard et al. 2011, p. 33). The point is that, regardless of whether or not CIOs possess adequate leadership skills, they may be simply denied opportunities for leadership, which precludes the opportunity to develop (or display) leadership acumen. For a CIO to be able to drive change and innovation, the organization must provide the opportunity and motivation.

In this study, we argue that a new explanation for this ambiguity is rooted in the existence and salience of stereotype profiles. That is, when CIOs are not perceived as equal among members in the C-suite (e.g., lack of leadership skills, lack of credibility), these beliefs may limit the potential for CIOs to exert strategic influence and may ultimately jeopardize IT-enabled initiatives.

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<sup>3</sup> Chief Technology Officer

<sup>4</sup> According to the 2012 “State of the CIO” survey (CIO magazine 2012) “more than half of the IT leaders (57%) are still perceived as a service provider or technology collaborator and nearly one in five (21%) say IT is negatively perceived as a cost center” (CIO magazine 2012, p. 1)

**Table 1. Positive and Negative Aspects of CIOs**

<b>Positive Attributes/traits</b>	<b>Negative Attributes/traits</b>
Task-focused deadline-oriented ‘focus on business models and processes before focusing on technology’ Highly motivated – ‘there is no substitute for a CIO’s passion for the industry and the business that he or she is in’ Politically-oriented; Savvy negotiator; Entrepreneur	Poor communicators ‘geeks and not business professionals’ ‘can’t listen –only lecture...they talk at –not to-business managers’ Socially inept – unable to build relationships Nerd Introvert
<b>Source:</b> Gonzalez et al. (2012)	

## Methodology

The goal of this study is to determine the salient personality and behavioral traits that best discriminate CIOs from CFOs and CMOs as well as to confirm the existence of a stereotype profile of CIOs held by business students. To do this, we developed and validated a survey instrument for measuring stereotype profiles of C-suite members and analyzed these profiles using discriminant analysis.

### Survey Instrument

We based our study on the California Psychological Inventory (CPI) – a well-established list of 152 personality and behavioral traits used for psychological testing (Gough 1996). Three independent raters – two experts in the IS field plus an expert in psychology and the statistical methodology – scrutinized all 152 items of the CPI to eliminate 1) any items judged to be unrelated to senior executives (e.g., “crying during movies”), and 2) any items considered redundant to the information available in one or more other items (i.e., highly correlated items are likely to be cancelled out in the analysis). Removing items identified by at least two raters reduced the list to 70 items. Each item was rated on a five point Likert scale (-2 strongly disagree, -1 disagree, 0 neutral, +1 agree, +2 strongly agree).

The survey presented an organizational scenario describing a CEO who, over the years of holding weekly meetings with CFOs, CIOs and CMOs, claimed to be able to “enter a boardroom and within 3 minutes identify who was the CFO, the CIO and the CMO”. The respondent was then asked to rank one of these three executives (randomly assigned) on the 70 personality and behavioral items. A brief description of the role of the executive (i.e., CFO, CIO or CMO) was presented. These descriptions were carefully crafted to demonstrate similarity and uniformity with respect to organizational hierarchy – the only difference being their specific roles and areas of expertise. This was important because the CIO and CMO are not always part of the senior executive team and this preconceived knowledge could have potentially biased the respondents’ perceptions.

### Sampling Procedure

The sample consisted of 252 undergraduate business students (i.e., 24 freshmen, 123 sophomores, 29 juniors, and 76 seniors) from a major North American business school who volunteered to complete the online survey in return for course credit. Participants were randomly assigned to treatments (i.e., CFO, CIO or CMO) and ranked only this single executive. The sample yielded 84 rankings of CFOs, 86 rankings of CIOs, and 82 rankings of CMOs for a total of 252 completed surveys.

### Data Analysis

We chose to analyze the data using a three-group (i.e., CIOs, CFOs, and CMOs), direct-entry discriminant analysis procedure given its usefulness for classifying cases into groups on the basis of multiple factors. In this study, the technique identifies which items best discriminate between groups (i.e., CFOs, CIOs and CMOs) and analyzes the precision of these items for group classification (Klecka 1980).

Our dependent variable was executive group (e.g., CFO, CIO, and CMO). All 70 items were treated as predictors, and the scores calculated for each predictor were the independent variables. Before conducting the discriminant analysis, however, the data was examined to meet the assumptions of this statistical technique. The procedure is described below.

We performed contingency table and chi-square hypothesis tests on demographic data to test for independence between treatment groups. The results show that the variables “gender” (chi-square = 0.425, df = 2, p = 0.809), “class year” (chi-square = 8.03, df = 6, p = 0.236), and “concentration area” (chi-square = 17.1, df = 16, p = 0.378) were distributed similarly across treatment groups. Therefore, we can conclude that the sample comes from a similar population.

Of a total of 252 cases, 5 cases (i.e., 2% of the sample) showed repetitive response patterns (i.e., all 1’s, all 2’s, etc.) and were removed reducing the sample to 247. Then, the 70 predictors were examined for missing values, fit within their distributions and the assumptions of multivariate analysis. These variables were examined separately for the cases in each group (CFO = 82; CIO= 84; CMO= 81).

Following Tabachnick and Fidel’s (2004) procedure to identify outliers, any response for any of the 50 items with a standardized score in excess of 3.29 (p < .001, two-tailed test) was considered an outlier and replaced with a “blank” entry. There were 24 outliers out of the 17,290 responses representing 0.14% of the sample. After removing these outliers, we confirmed normality in each item distribution by checking for significant skewness and kurtosis using a conservative Z score of 3.29.

We then examined the assumption of multicollinearity or singularity on the remaining 247 cases. Tabachnick and Fidel (2004) suggest a critical value for multicollinearity as any bivariate correlation exceeding 0.70. The two largest bivariate correlations in the sample were .693 and .694. Since they both involved the same item, this item was removed. The final sample consisted of 69 predictors (i.e., items) and 247 cases.

With the assumptions met, we then conducted the discriminant analysis. The procedures and results are discussed below.

## Results

We randomly split the 247 cases into two subsets – a main sample and a “holdback” sample – by selecting every third case for the holdback sample. Adopting a conservative approach, we excluded all cases with any missing values. The main sample consisting of 153 cases (i.e., 61.9% of the sample) was used to derive the discriminant functions and the holdback sample of 78 cases (i.e., 31.6%) was used only to test the resultant classification accuracy thereby validating the profiles obtained from the main sample. A discriminant analysis based on all 69 items (i.e., personality and behavioral traits) revealed two highly significant discriminant functions (i.e., a combination of items) that best predicted group membership. The predictive accuracy (i.e., correct classification into groups) of the model for the main sample was 93.5% and the holdback sample was 70.5% (see Tables 1 and 2).

<b>Actual group</b>	<b>No. of cases</b>	<b>Predicted group</b>		
		<b>CFO</b>	<b>CIO</b>	<b>CMO</b>
CFO	51	<b>47 (92.2%)</b>	4 (7.8%)	0 (0%)
CIO	53	3 (5.7%)	<b>49 (92.5%)</b>	1 (1.9%)
CMO	49	0 (0%)	2 (4.1%)	<b>47 (95.9%)</b>
Percentage of cases correctly classified: 93.5%				

Actual group	No. of cases	Predicted group membership		
		CFO	CIO	CMO
CFO	26	<b>17 (65.4%)</b>	6 (23.1%)	3 (11.5%)
CIO	27	5 (18.5%)	<b>18 (66.7%)</b>	4 (14.8%)
CMO	25	1 (4%)	4 (16%)	<b>20 (80%)</b>
Percentage of cases correctly classified: 70.5%				

We then proceeded to identify which of the 69 items best discriminated CFOs, CIOs and CMOs. We considered an item to be a good discriminator if its structure coefficient exceeded +/- .3 (i.e., an item capable of explaining at least 10% of the remaining variance). Eliminating all items failing this test reduced the set of items from 69 to 18. A new discriminant analysis was then run on the main sample using only these 18 items. The results not only reconfirmed the existence of two significant discriminant functions (see Table 3) but actually enhanced the overall classification accuracy of the holdback sample due to the reduction of poor discriminating variables<sup>5</sup> (see Tables 4 and 5). This indicates that our sample of business students could accurately differentiate CFOs, CIOs, and CMOs on the basis of the 18 items listed in Table 3. Table 3 also shows how these items align with the two discriminant functions produced by the analysis.

No.	Item Description (predictors)	Discriminant loading (rank)	
		Function 1	Function 2
1	CxOs have a vivid imagination	.453	.348
2	CxOs do things by the book ( <i>reverse item</i> )	-.390	
3	CxOs are open to change	.376	
4	CxOs see humor in situations	.341	
5	CxOs put a new perspective on things	.338	
6	CxOs express themselves easily	.312	
7	CxOs are skilled in handling social situations	.301	
8	CxOs understand people who think differently	.289	
9	CxOs can see different points of view	.287	
10	CxOs act comfortably with others	.271	
11	CxOs are effective communicators	.262	
12	CxOs don't talk a lot ( <i>reverse item</i> )	-.256	
13	CxOs keep in the background ( <i>reverse item</i> )		.334
14	CxOs lay down the law to others		-.285
15	CxOs try to outdo others		-.274
16	CxOs automatically take charge		-.269
17	CxOs believe that they are important		-.268
18	CxOs put people under pressure		-.265

<sup>5</sup> Poor discriminating variables (also known as redundant variables) refer to those variables that do not contribute to the analysis; that is their unique contributions are insufficient. For instance, the presence of two or more variables whose group means are similar yields poor discrimination (Klecka 1980).



Actual group	No. of cases	Predicted group		
		CFO	CIO	CMO
CFO	53	<b>48 (90.6%)</b>	3 (5.7%)	2 (3.8%)
CIO	56	7 (12.5%)	<b>46 (82.1%)</b>	3 (5.4%)
CMO	53	1 (1.9%)	4 (7.5%)	<b>48 (90.6%)</b>
Percentage of cases correctly classified: 87.7%				

Actual group	No. of cases	Predicted group		
		CFO	CIO	CMO
CFO	26	<b>20 (76.9%)</b>	5 (5.7%)	1 (3.8%)
CIO	28	2 (7.1%)	<b>23 (82.1%)</b>	3 (10.7%)
CMO	26	0 (0%)	2 (7.7%)	<b>24 (92.3%)</b>
Percentage of cases correctly classified: 83.8%				

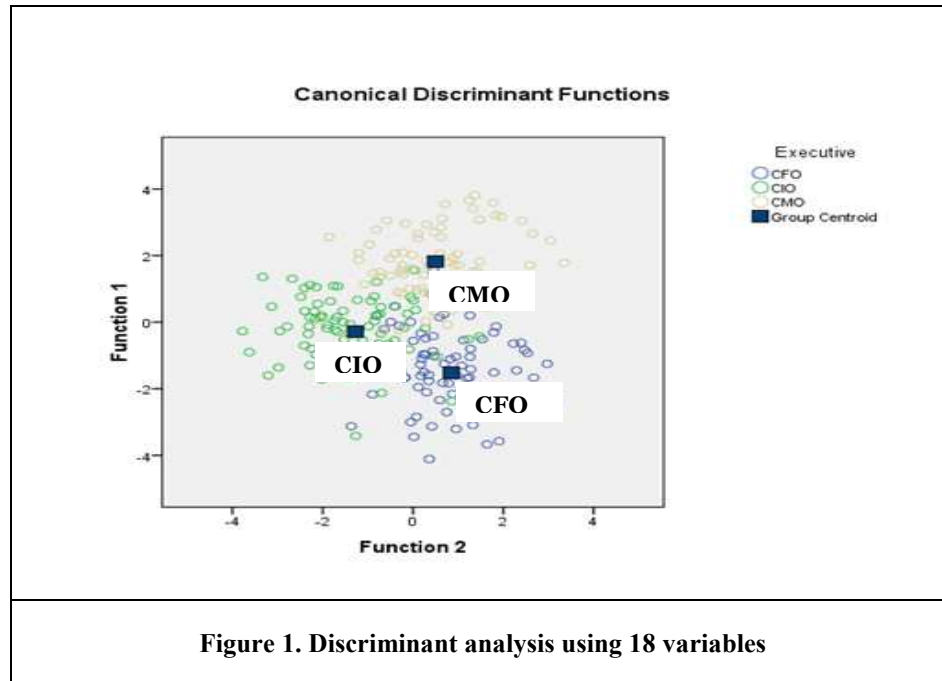
The items loading on Function 1 were grouped into four different aspects of personality: creativity, openness, sociability and communication. Collectively, these traits represent valuable leadership skills. In contrast, the items loading on Function 2 reflect two behavioral constructs – assertiveness and dominance – that stand in stark contrast to the traits of Function 1. The collective traits of Function 2 reflect a proclivity toward competitive action. Whereas Function 1 highlights abilities such as “seeing different points of view” and “being open to change”, Function 2 traits consist of “laying down the law to others” and “automatically taking charge”. It is interesting to note in Table 3 that one item (“having a vivid imagination”) loads on both functions – positively on Function 1 and negatively on Function 2. Having a vivid imagination is directly related to creativity, openness, sociability and communication but indirectly related to assertiveness and dominance.

	Construct	Items/Variables	CFO	CIO	CMO
Function 1	Creativity	CxOs have a vivid imagination	2.3	3.3	4.4
		CxOs put a new perspective on things	3.0	3.7	4.4
	Openness	CxOs are open to change	2.7	3.5	4.3
		CxOs understand people who think differently	3.0	3.4	4.1
		CxOs can see different points of view	3.3	3.5	4.2
		CxOs do things by the book ( <i>reverse item</i> )	2.2	2.6	3.8
	Sociability	CxOs see humor in situations	2.4	2.7	3.8
		CxOs are skilled in handling social situations	3.3	3.0	4.3
		CxOs act comfortably with others	3.7	3.5	4.3
	Communication	CxOs express themselves easily	3.3	3.2	4.2
		CxOs are effective communicators	3.7	3.4	4.5
		CxOs don't talk a lot ( <i>reverse item</i> )	3.4	2.9	4.2
Function 2	Assertiveness	CxOs keep in the background ( <i>reverse item</i> )	3.6	2.4	3.7
		CxOs automatically take charge	3.6	2.9	3.5
		CxOs believe that they are important	4.6	4.0	4.2
	Dominance	CxOs lay down the law to others	4.1	3.2	3.0
		CxOs try to outdo others	3.7	3.0	3.7
		CxOs put people under pressure	4.2	3.4	3.5

Figure 1 is a scatterplot of all 252 cases in the main sample showing the group centroids for CFOs, CIOs and CMOs. The axes are expressed in standard deviations. On the y-axis representing discriminant Function 1, the three centroids are well separated. On this Function representing creativity, openness, sociability and communication, the position of the CFO centroid indicates that the students judged CFOs as much less creative, open, sociable and effective communicators than CIOs (by 2 standard deviations)

and less than CMOs (by almost 4 standard deviations). In contrast, the strongly positive CMO centroid indicates that the students profiled CMOs as being highly creative, open, sociable and good communicators. CIOs were judged to be slightly creative, open, sociable and effective in terms of communication.

On the x-axis representing discriminant Function 2, the CFO and CMO centroids are in close proximity with a positive ranking (i.e., slightly above the overall average). In sharp contrast, the CIO centroid is almost 2 standard deviations below those of CFOs and CMOs suggesting that students feel CIOs lack assertiveness and tend not to dominate others relative to CFOs and CMOs. Table 7 indicates the grouping of items and means per group showing scores on each of the 6 key concepts that collectively constitute Functions 1 and 2.



The preceding analysis verifies the existence of significant stereotypes for CFOs, CIOs and CMOs among undergraduate business students.

## Discussion

While previous research has alluded to the existence of organizational stereotypes (e.g., “technical people are socially-inept”, “accountants are boring”), this is the first study to specifically measure and contrast CFOs, CIOs and CMOs, and thus the leadership qualities of these business leaders. What is clear from our results is that the business students sampled hold very definite stereotypes of each of these three organizational roles. Perhaps most surprising was our discovery that these students differentiated these organizational roles on the basis of only six general concepts – creativity, openness, sociability, communication, assertiveness and dominance. Figure 2 and 3 highlight these differences.

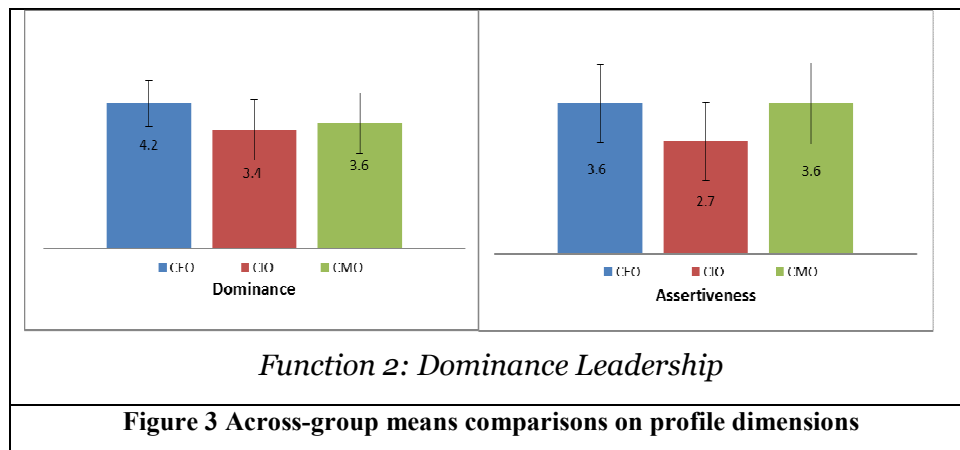
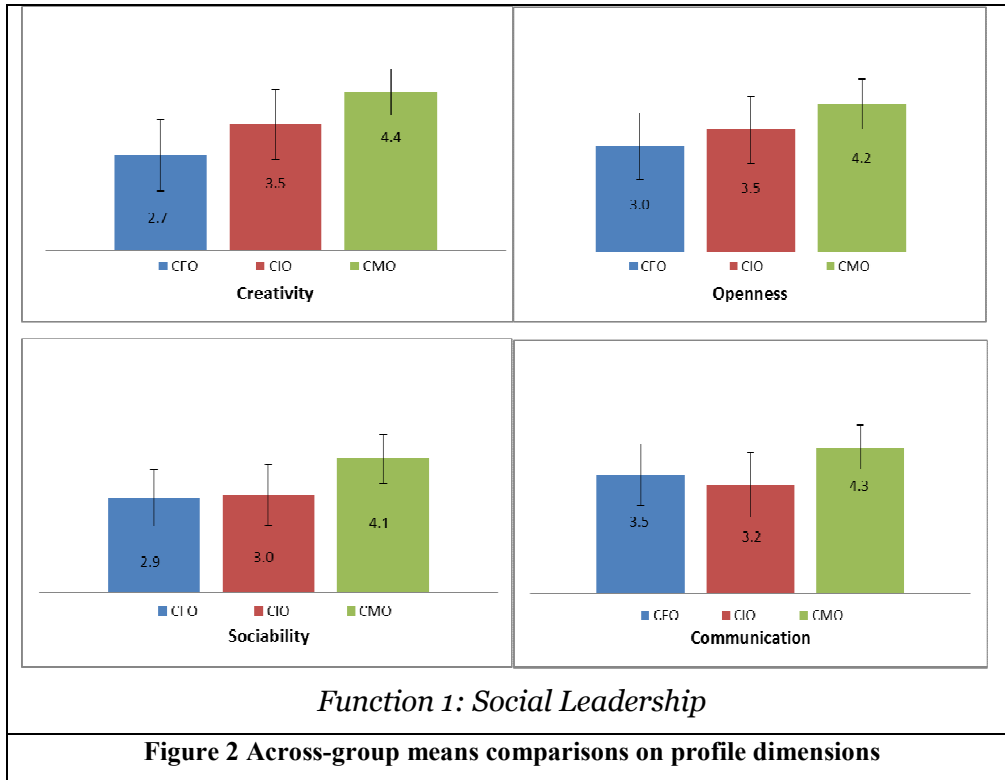
The key aspect of the Figures is the relative gaps between CFOs, CIOs and CMOs on the six key dimensions as opposed to their actual rankings/scores. That is, it is less important to know that CIOs are viewed as being open to change than it is to know that CIOs are viewed to be much less open to change than CMOs but slightly more open than CFOs. Looking at Figure 2, the proximity of both CIOs and CFOs to a score of 3.0 on openness indicates that the students’ response to the statement CIOs (or CMOs) are “open to change” was neutral (i.e., they neither agreed nor disagreed). It was the significant gap between CMOs and both CFOs and CIOs on this dimension that was the differentiating factor.

The two organizational roles that stand in stark contrast are the CFO and CMO. In Figures 2 and 3, they present virtual mirror images of each other. Students profile CMOs as being creative, open, sociable and good communicators relative to CFOs but see CFOs as much more dominant. The CIO profile parallels that of the CMO but significantly lower on the chart. The single exception to this is in regard to the concept we have labeled “dominance”. Here, CMOs and CIOs are indistinguishable from each other but noticeably different from CFOs. So, while CIOs are seen as more creative and open than CFOs, they are seen as being less effective as communicators and significantly less assertive than both CMOs and CFOs. CFOs are profiled by students as lacking creativity and openness relative to CMOs and to a lesser extent CIOs but CFOs are seen as being very dominant and assertive.

If we think of Function 1 as “social leadership” and Function 2 as “leader dominance”, it sheds new light on some of the observations of other researchers. CIOs have been described as “last among equals” referring to the fact that they are perceived to be the junior (if not weakest) member of the senior management team. This “weakness” may arise from a stereotypical perception of CIOs as being non-assertive and possessing low communication skills. Furthermore, this may be part of a vicious circle where senior managers, who share this CIO stereotype, behave in ways that reinforce their stereotypical views. That is, the lack of opportunities available to CIOs may deny them the ability to seize such initiatives more frequently and aggressively. As Peppard et al (2011) state ... “possessing leadership competencies is only one side of the equation”. The question facing CIOs is “Do I wait to be invited to the party or do I crash it?” Both alternatives denote weakness and exude a lack of self-confidence. The dilemma for CIOs is that, despite the perception of adequate social leadership skills (i.e., Function 1), without opportunity to take initiative, they are ineffectual relative to other senior managers due to their lack of leader dominance (Function 2).

Our results also support preliminary findings on the persistence of the stereotype in the student population. The stereotype profiles of these C-level members did not change over the four years of the business program. We expected to find a change in the stereotype profiles among the 3<sup>rd</sup> and 4<sup>th</sup> year students because of their greater exposure to *real* organizational settings through summer-internships. However, their perceptions did not change despite educational, gender mix and roles changes during their internships. This implies that students enter their professional life with well-defined stereotype profiles of these business leaders that may affect their interprofessional interactions and even more critical decision-making at higher level in the organizations. Occupational stereotypes have shown historical influences such as domination of a particular professional group by a single gender (e.g., Porter et al., 1983; Steele et al., 2002) or race (e.g., Biernat et al., 2009; Devine and Elliot, 1995) or functional background (Westphal and Milton, 2000) that may lead to prejudice and discrimination at higher levels in the organization. While the presence of demographic and functional minorities on boards is commonly perceived favorably, scholars on organizational demography and social conformity are less optimistic about the extent to which these minorities can successfully influence group decision making (Westphal and Milton, 2000). Their argument is that individual differences (e.g., demographic, functional) reduce social cohesion between group members and that these social barriers prevent minorities from contributing to board decision-making and strategic involvement (Nielsen and Huse 2010; Hambrick et al. 1996). This emphasizes the need to investigate the potential influence of holding stereotype profiles of C-level members over time.

Furthermore, our findings may also shed light on the ongoing concerns regarding enrollments in MIS programs. Research has shown that the stereotypes that people hold are crucial factors that influence their career choices (Holland, 1996; 1973). Therefore, it is important that students have realistic perceptions of CIOs and their work because misleading representations can lead to twisted judgments in their professional interactions with these executives. For example, if CIOs are perceived to have fewer leadership qualities than their business counterparts do and thus as less likely to climb the corporate ladder, students may opt for other career choices. Prior studies have shown that consequences of negative leader evaluations include poorer candidates for career advancement, a lower probability of promotion to specific positions, and a general exacerbation of the barriers to upward advancement (Powell and Butterfield, 1997; Morrison and Von Glinow 1990). This possible linkage between CIO stereotypes and career choices is an avenue for future research.



## Conclusion

This research is a first step towards understanding the nature and extent of CIO stereotypes and the implications of this phenomenon in the workplace. Building on the strong theoretical foundation of established stereotype research, we extend this work to explore the content of stereotype profiles at the C-suite level. By introducing a new research lens to examine the well-documented and sometimes bewildering situation of CIOs, we hope to both advance our understanding this phenomenon and to furnish effective strategies for the CIO community. Our base line results suggest that business students enter their professional careers with well-defined stereotype profiles of business leaders and that these leaders are seen as distinct on two important leadership domains – social and dominance leadership. There are also indicators that some business leaders share more perceived leadership traits than others. Such similarities and differences in leadership profiles may have important implications for the role of the CIO in organizations.

The next step of our research involves a stratified sampling plan to determine whether these stereotypical expectations that students hold of these business leaders will persist over time and after exposure to greater work experience. Our plan is to survey MBA students with 5 or 6 years of business experience to see if we can still classify CFOs, CIOs and CMOs correctly based on their responses to these 18 items. Then we will survey senior executives with 10-15 years of experience and CEOs to see if they hold similar stereotypes. In addition, the extent to which these stereotypes will translate into actual behavior in the decisions concerning the role of the CIO and thus the IT department are yet to be explored.

Therefore, the next phase of this research stream is to test to see whether these stereotype profiles result in biased decision-making. We have planned a series of experiments to ascertain whether or not holding stereotypical beliefs bias decisions in favor and against the CIO in comparison to CFOs and CMOs; thus confirming that people actually behave in accordance with their beliefs. If we are able to link stereotypic beliefs concerning CIOs with decisions impacting their organizational role, the results should advance our understanding of the perception gap that has intrigued (and plagued) IS researchers for a long time.

The ultimate goal of this research program is to apply our research findings to the actual practice of IS professionals and, in particular, CIOs. Research (Carnegie and Napier 2010, p. 363-364) has shown that where members of a group believe that their group is being stereotyped negatively, they have three options: they can ignore the negative stereotype, leave the group, or work to change the stereotype. The option of leaving the group may be virtually impossible (e.g., ethnic and gender groupings) or considered to be undesirable (e.g., occupational groupings where a considerable amount of effort has been invested in becoming a member). Ignoring the negative stereotype, or even accepting and playing up to it, may be acceptable if significant costs do not flow from this. But members of a group burdened with a negative stereotype are more likely, if they wish to enhance their social status, to work to change the stereotype. CIOs face the same set of alternatives. It is our plan to extend our research to explore the means for CIOs to enhance their organizational status.

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