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ABSTRACT

The scope of this work is to obtain a model for the critical competencies required for the role of the Brazilian CIO. For purposes of analysis, a set of six models found in the literature were considered in this research. Based on the theoretical references, a questionnaire was elaborated. The questionnaire was then applied via a web-survey and counted on the participation of 111 valid respondents, all of whom were Brazilian CIOs. Once the data collection was accomplished, exploratory factor analysis was conducted in order to obtain a Brazilian meta-model. Seven critical competencies associated with the professional performance of the Brazilian CIO were drawn from this analysis, namely knowledge of the business, understanding of the organizational context, the ability to influence the organization, technical expertise, external networking, management of the information technology operation and the capacity to innovate using new information technologies.

Keywords: CIO, Critical Competencies for the CIO, Brazilian CIOs, Brazil

INTRODUCTION

The CIO (Chief Information Officer) is the name currently given to the individual responsible for the information technology (IT) area of an organization. The CIO's professional activity is as new as the very recent area of information technology.

The position of CIO is extremely important for organizations (Banker et al., 2006), since it must link the organizational strategy to the information technology (Earl, 1989), adjusting the IT in accordance with the requirements of the business (Grover, 1993).

From the 1980s onwards, as a result of the changes that the technology was causing in the business world, the figure of the CIO came to have more influence in organizations (Synott and Gruber, 1981). The competition that companies were facing also came to have different characteristics resulting from technological evolution, with its many facilities and complexities (Galas and Marques, 2006).

In this new environment, companies began to see information technology as not only a support area but also a strategic area. Thus, the job description of the individual responsible for information technology came to include new attributes, adding characteristics of a "businessman" to a traditionally technical profile (Synnott, 1987; Lancit, 2001). CIOs would therefore become the key link between the business and constantly changing technology (Earl, 1989). They needed to adjust IT in accordance with business needs (Grover, 1993; Kitzis and Broadbent, 2005). Furthermore, they should ensure the optimization of costs and reduce risks in the adoption of information technology (Boritz and Lin, 2007).

From this more strategic perspective of IT, organizations came to require a chief IT executive who not only possessed technical competencies but also had managerial skills (Lancit, 2001). Thus, it has become increasingly relevant for the CIO to possess a basic characteristic of walking a fine line between the technical and managerial aspects (Igbaria et al., 1991). In

other words, these professionals, whose tasks are becoming ever more complex, perceive that their highly technical skills are not always sufficient to tackle the challenges of a day-to-day life that is based on transformations (Loogma et al., 2004). The duality revealed by these technical, and at the same time managerial characteristics, the need to understand the organizational context, the perception of the appropriate dosage of innovation and also the responsibility for cultural change brought about by the use of IT are some of the pressures to which this professional is constantly subjected (Chatterjee et al., 2001).

This work emerged as an opportunity to present to the universe of Brazilian CIOs, a model of competencies suited to their day-to-day existence, offering a practical and truly useful viewpoint to them of the organizational context in which they live.

Sojer et al. (2006) point out that there are very few recent studies offering a systemic view of the competencies required for the role of the CIO. Moreover, they question whether the studies conducted to date – mostly prior to 2000 – are still relevant (Sojer et al., 2006). In this task, namely to elaborate an updated and systematic overview of the critical competencies of the CIO, there is also the need to adapt these imported models to the Brazilian environment.

Thus, the main objective of this paper is to identify the critical competencies that Brazilian CIOs should have – as perceived by themselves – to perform their duties adequately.

THEORETICAL REFERENCES

The Chief Information Officer – CIO

The CIO (Chief Information Officer) is the title used to designate the chief IT executive of an organization. Although they have several job titles, depending on the circumstances and cultures of each company, this term used in a generic manner (Lepore, 2000) highlights the importance acquired by information technology in the corporate world.

According to Kitzis and Broadbent (2005), the CIO is responsible for identifying the information technologies that the organization needs and subsequently delivering the corresponding services. In fact, the term CIO is very wide-ranging and the nomenclature varies from company to company (Lepore, 2000). Therefore, this paper sees the CIO as the professional responsible for the information technology of an organization, or part thereof.

The quest for competitiveness within this new environment characterized by swift technological evolution has led organizations to attribute the individual responsible for the IT area with a new job profile. In addition to the operational aspects hitherto attributed to the function, these professionals also need to have managerial characteristics (Synnott, 1987). They need to be the kind of professionals who can bridge the gap between the language of business and the increasing need for companies to adapt to the technological world, ensuring that it has the levels of competitiveness and innovation demanded of a changing economy (Earl, 1989). In other words, this professional is the person responsible for aligning IT with the company's business (Grover, 1993).

Models of CIO Competencies

Ensuring the alignment of IT with corporate strategy determines the competencies required for the role of the CIO (Galas and Marques, 2006). For this, a combination of social and intellectual competencies is required. The intellectual competencies ensure the quality of the alignment, in that they validate methodologies and strategies, whereas the social competencies focus on the human relations required to ensure this alignment (Reich and Benbasat, 2000). Thus, in addition to traditional technical competencies, this professional now also needs to develop skills in communication, business, people management and strategic planning (Rockart, 1982).

Six models of CIO competencies were selected from the international academic literature and they served as the theoretical basis for the creation of a meta-model associated with Brazilian CIOs.

These models with their respective referential bases are then presented in the form of indicators, which qualify the competencies required by the CIO.

a) Er Model (Earl, 1996)

Er.1 Knowledge of IT. Reflecting the technical knowledge required for the role of the CIO;

Er.2 Experience in systems. Being experienced in information systems has emerged as an indicator for the survival of CIOs. This competency is related to their training and past experience in the role;

Er.3 Credibility. Indicating the guarantee of performance of the IT area, which is related to the management of its indicators, the control of its budget and servicing of the user areas. It reinforces the view that the organization has of the IT area and its CIO;

Er.4 Shared Vision. Reflecting the alignment of IT vision to the needs of the organization and to efforts to achieve common goals;

Er.5 Proactive planning. Indicating the need for the creation of IT planning integrated to the company's strategic planning;

Er.6 Attitude of the organization in relation to IT. Indicating how the organization perceives the IT role, i.e. its expectations and what contributions it expects;

Er.7 Construction of relationships. Indicating the ability of the CIO to win over allies and/or sponsors for IT initiatives. It reveals the internal networking conducted by the CIO;

Er.8 Relationship with the CEO. Indicating a specific type of relationship formed with the chief executive officer of the organization. It is a facilitator for recognition of CIOs in the group and for ensuring financial and moral support for their initiatives. Moreover, it manifests itself as a guarantee for the alignment of IT with the strategies of the business;

Er.9 Social Skills. Having the skills related to teamwork, communication and the ability to motivate the team are the mainstays of this competency;

Er.10 Sensitivity. Having the perception of what is important for the company at any given moment is the hallmark of this competence. In addition to defining the priorities and the notion of the feasibility of IT costs, CIOs will be more successful if they have the sensitivity to know when to be bold and when to be conciliatory.

b) Ps Model (Periasamy and Seow, 1998)

Ps.1 Knowledge of the business. Needing to understand the context in which IT operates, in order to be able to propose/maintain its alignment with the business;

Ps.2 Versatility and perspicacity. Having the sensitivity to propose solutions which are innovative and, at the same time, relevant to the organization in the circumstances in which it is situated;

Ps.3 Technical competence. Having the required technical skills;

Ps.4 Manage, interact and motivate the team. Internal leadership is identified as an essential skill for achieving the objectives of IT;

Ps.5 Maintain good relationships with peers, the team and external partners. Having the human relationship skills necessary for the performance of IT activities.

c) Rv Model (Ravarini et al., 2001)

Rv.1 Interpersonal skills. Maintaining relationships with staff and external consultants;

Rv.2 Holistic vision. Seeing the company as a whole;

Rv.3 Long-term vision. Evaluating the consequences of long-term decisions, as well as the opportunities offered by new technologies;

Rv.4 Effective leadership. Establishing goals and bringing the entire company together to achieve them;

Rv.5 Propensity to innovate. Keeping up to date in order to assess the new opportunities for the business;

Rv.6 Management knowledge. Knowledge of managerial models and management tools;

Rv.7 Knowledge of the business. Knowledge of the processes, information flows, competencies required of the team and the activities of the business;

Rv.8 Knowledge of the business environment. Understanding the environment and the phase that the business is experiencing;

Rv.9 Technical knowledge. Theoretical knowledge of the opportunities offered by IT and its features;

Rv.10 Technical expertise. Professional experience;

Rv.11 Planning capacity. Developing IT planning that can support the business;

Rv.12 Ability to assess organizational impacts. Evaluating the economic and organizational impacts of IT.

d) Ta Model (Tagliavini et al., 2004)

Ta.1 HR Management. Activities related to the hiring of IT personnel, training (IT professionals and/or users), integration of IT teams and people enhancement;

Ta.2 Strategic management of IT. Establishing IT solutions, evaluating strategic opportunities of the business;

Ta.3 Management of IT operations. Activities relating to the IT operation;

Ta.4 Management of IT relationships. Developing relations with the organization, peers, users, consultants and academics, i.e. promotion of IT;

Ta.5 Organizational management of IT. Contributions of IT to the development of the organization.

e) Kb Model (Kitz and Broadbent, 2005)

Kb.1 Leadership. Influencing not only one's team but also one's peers;

Kb.2 Understanding the fundamentals of the business. Knowing the environment in which the business is situated;

Kb.3 IT vision aligned with the business. Identifying how IT can accelerate the attainment of strategic corporate goals;

Kb.4 Shaping IT according to expectations. Identifying the expectations of other areas to form the basis for IT policies;

Kb.5 Governance. Establish a governance model that ensures the credibility of IT;

Kb.6 Integration between the business and IT strategies. Ensuring that IT projects are linked to business strategy;

Kb.7 Lean structure. Establishing an IT infrastructure using processes, strategic IT management built on solid financial foundations;

Kb.8 High performance culture. Keeping the profile of the IT team suited to business needs;

Kb.9 Risk Management. Attention to risks associated with IT;

Kb.10 Business Language. Communicating the contributions of IT to the organization, in business language.

f) Lk Model (Lane and Koronios, 2007)

Lk.1 Leadership. Influencing the organization – peers and team – for the achievement of the CIO's objectives;

Lk.2 Strategic planning of the IT infrastructure. Developing strategic IT planning, aligned with the strategic business plan;

Lk.3 Alignment with the business and innovation. Providing the business with technological innovations that are relevant to the organizational moment/context;

Lk.4 Management of HR for IT. Retaining and hiring IT resources;

Lk.5 Relationship management. Relating with all other areas of the organization, enabling possible IT actions/projects;

Lk.6 Budget and control. Financial management of the IT area, ensuring the viability of necessary investments;

Lk.7 Governance and compliance with the regulations. Complying with regulations and establishing standards of governance that provide transparency to investors and the government;

Lk.8 Relationship with suppliers. Updating in terms of emerging products and/or technologies. Adequate usage of the resources offered by the supplier;

Lk.9 Information security/Business continuity. Being attentive to the risks associated with IT;

Lk.10 Management of business processes. Seeking opportunities to improve business processes through the use of IT;

Lk.11 Project management. Knowledge of methodologies for project management;

Lk.12 Management of IT architecture. Maintaining adequate operation of IT in line with corporate needs;

Lk.13 Knowledge management. Maintaining the knowledge essential for the business of the organization (for computerized systems);

Lk.14 Measurement of added value to the business. Use metrics to justify IT investments by linking them to business goals.

From the six models described above, 56 competencies were listed. After analysis of these competencies derived from different models, several of them were perceived to be redundant, which led to the consolidation of 25 skills, which were transformed into topics of the questionnaire that was prepared. Table 1 below explains these competencies and their associated referential models.

#	COMPETENCY	MODELS
1	Identifying the right moment to introduce new technologies	Er;Ps;Rv;Lk;Ta
2	Keeping technologically updated	Rv
3	Being able to evaluate the organizational impacts arising from new technologies	Rv;Ta
4	Seeking for solutions in line with business opportunities	Ta;Lk
5	Maintaining a close relationship with suppliers	Lk
6	Establishing relationships with the other areas of the organization – internal networking	Er;Ps;Rv;Lk;Ta
7	Maintaining relationships outside the organization – external networking	Rv;Ps;Ta
8	Being able to communicate in business language	Kb
9	Maintaining a model of IT governance	Er;Rv;Lk;Kb
10	Using financial metrics	Lk;Kb
11	Being trained in IT	Er;Rv;Os
12	Having experience in IT	Er;Rv;Os
13	Having experience in project management	Lk
14	Being a support for other areas to achieve their goals	Er;Kb
15	Having the ability to see the organization as a whole	Rv
16	Knowing the expectations of the other areas	Kb
17	Effectively leading the IT team	Ps;Rv;Kb;Lk
18	Exercising leadership throughout the organization	Er;Rv;Kb
19	Maintaining the IT operation	Ta;Lk
20	Constantly evaluating the risks associated with IT	Kb;Lk
21	Keeping the profile of the IT team suited to corporate needs	Kb;Lk
22	Recruiting, training, integrating and developing IT personnel	Ta;Lk
23	Being able to develop IT planning capable of supporting the business	Er;Rv;Kb;Lk
24	Knowing the business processes	Ps;Rv
25	Knowing the business environment	Ps;Kb

Table 1 – Critical Competencies vs. Referential Models
Source: Elaborated by the Authors

METHODOLOGICAL PROCEDURES

This study adopted an exploratory methodological approach seeking to identify the critical competencies for the role of Brazilian CIOs, based on their own perception of their professional duties.

The first phase involved a bibliographical review that identified six models of critical competencies of the CIO. By means of this bibliographical review, 56 indicators that could influence these competencies were collected and consolidated into 25, as presented above.

Based on this, a questionnaire was prepared for use in field research. The questions were submitted to respondents in the form of a Likert scale with four categories, in order to eliminate the neutral element (Malhotra, 2006).

First, the questionnaire was applied on a pre-trial, as suggested by Malhotra (2006), together with three CIOs and another non-CIO respondent, in order to validate the understanding of the proposed questions.

The questionnaire was then submitted for responses between March 5 and 22, 2009. Brazilian CIOs were invited to participate at this stage, using direct mail obtained from CIO Magazine, containing a list of 2000 individuals. 112 responses were collected from different Brazilian CIOs, with 111 valid responses.

The application of the questionnaire was conducted using an online internet survey tool called Question Pro (www.questionpro.com). This approach is recommended by Lane and Koronios (2007), due to the inherent nature of CIOs.

Once the data from respondents had been collected, the internal consistency of the scale was checked by calculating Cronbach's alpha (Hair et al., 2005; DeVellis, 2003).

Exploratory factor analysis was then conducted (Hair et al., 2005). The objective of this technique is to study the relationship between the various variables in order to permit the reduction of data by grouping them into factors (Malhotra, 2006). Thus, by using the 25 potentially influential indicators in the critical competency of CIOs it was possible to diagnose the factors that effectively influence this competency.

Initially, Bartlett's test of sphericity was applied and the sampling adequacy test of Kaiser-Meyer-Olkin (KMO) was conducted. Both tests check the adequacy of the data to factor analysis (Hair et al., 2005).

Exploratory factor analysis was then applied. This analytical method was chosen in order to obtain a minimum number of factors responsible for maximum data variance. The minimum number of factors was determined from the eigenvalues. Only those factors with eigenvalues greater than 1 were maintained, according to the latent root method (Hair et al., 2005). Additionally, it was considered desirable that the factors extracted should respond for no less than 60% of the total variance (Malhotra, 2006).

The EQUAMAX rotation method – which seeks to simplify the columns of the factor matrix, providing a clearer separation of the factors (Hair et al., 2005) – was used in this study. Based on the results, the relevant factors were identified and a nomological network to be tested in future research was defined (Trochim, 2004).

Following the recommendations of Hair et al. (2005), a discriminant validity test was conducted to determine whether the factors were different between themselves at an appropriate level of statistical significance. In other words, the test was conducted to ensure that the indicators of a given factor were not correlated with the other factors.

Similarly, with a sample of 111 respondents only the indicators that had a factor loading on their respective factor of at least 0.52 were retained (Hair et al., 2005, p. 112).

Based on the results obtained, a meta-model of the critical competencies required for the role of the CIO was prepared for further tests via confirmatory factor analysis.

The support tool used was the SPSS (Statistical Package for Social Sciences), version 15.0.

DATA ANALYSIS AND PROPOSED MODEL

Data Analysis

The 25 questions applied in the research were considered in the analysis as being the variables in question. The resulting groupings are the factors of the analysis and reflect the critical competencies to be obtained.

Initially, tests were performed for evaluation of possible biases and to establish the reliability of the data. For this purpose, Cronbach's alpha coefficient was used, the result of which was equal to 0.776, proving that the variables are consistent in their scales (Malhotra, 2006).

The first evaluation performed was the Kaiser-Meyer-Olkin (KMO) statistical test, which indicates the adequacy of the sample, assessing whether the original data make it feasible to use factor analysis in a satisfactory manner. For this test to

show that such factors do not satisfactorily explain the variations in the original data, it would be necessary for the MAS (Measure of Sampling Adequacy) to indicate a degree of explanation of less than 0.5 (Hair et al., 2005). Since the MSA was 0.666, it is understood that the sample has a reasonable degree of explanation (0.5 <MSA <0.7) (Hair et al., 2005).

Bartlett's test of sphericity was then applied. The expected result, in order not to reject the factor analysis, is a significance of less than or equal to 0.05 (Hair et al., 2005). For this test, the significance found was 0.000, indicating that the grouping of the variables is feasible.

Having established the feasibility of factor analysis, the powers of explanation of the factors in each of the variables was assessed by means of the anti-image correlation matrix, where the main diagonal indicates whether a variable is significant to participate in the analysis. Analyzing the anti-image correlation matrix obtained, two variables of little significance to the grouping were identified (values of the main diagonal less than 0.5). Therefore, in order to improve the explanation of the variables by means of the factors, two variables were excluded, namely "Identifying the right moment to introduce new technologies" (0.277) and "Keeping technologically updated" (0.364).

The tests were then repeated for only 23 variables, generating a considerable improvement in the model. The matrix of commonality was then obtained to identify the degree of explanation of each variable in the selected factors. The matrix of commonality obtained identified the "Recruiting, training, integrating and developing IT personnel" variable as being of scant significance to the grouping (the main diagonal value <0.5), which is why it was also excluded.

The anti-image correlation matrix for the 22 remaining variables was again obtained. For this grouping format, all tests showed satisfactory results, permitting the adoption of the factor analysis. However, by creating groups of variables through the Equamax rotation method (the objective of which is to minimize the number of factors needed to explain each variable and maximize the explanation of the variables within a single factor), it was seen that two variables were featured on their own, each in their own factor. Therefore, these two variables were excluded from the analysis, namely "Having experience in project management" and "Maintaining a model of IT governance."

Thus, the exploratory factor analysis extracted seven factors, which accounted for 63.978% of the total variance expected. Table 2 shows the explained portion of the total variance for each factor.

Variable	Initial Eingenvalues			Sum of the Square of the Loads			Rotation of the Sum of the Square of the Loads		
	Total	% of Variance	% Accumulated	Total	% of Variance	% Accumulated	Total	% of Variance	% Accumulated
1	4.282	21.410	21.410	4.282	21.410	21.410	2.247	11.233	11.233
2	2.036	10.179	31.588	2.036	10.179	31.588	2.018	10.090	21.323
3	1.550	7.750	39.338	1.550	7.750	39.338	1.778	8.889	30.211
4	1.453	7.264	46.602	1.453	7.264	46.602	1.774	8.870	39.081
5	1.375	6.873	53.475	1.375	6.873	53.475	1.688	8.442	47.524
6	1.150	5.794	59.224	1.150	5.794	59.224	1.653	8.267	55.291
7	0.951	4.754	63.978	0.951	4.754	63.978	1.637	8.187	63.978
8	0.906	4.532	68.510						
9	0.839	4.193	72.704						
10	0.771	3.860	76.560						
11	0.691	3.457	80.017						
12	0.616	3.080	83.097						
13	0.604	3.018	86.115						
14	0.545	2.727	88.842						
15	0.432	2.162	91.004						
16	0.403	2.017	93.021						
17	0.396	1.978	95.000						
18	0.371	1.856	96.855						
19	0.346	1.731	98.586						
20	0.283	1.414	100.000						

Table 2 – Eigenvalues and Explained Variance
Source: Elaborated by the Authors

As stated above, the factors were determined by the factor load between the item and the factor. According to Hair et al. (2005, p.112), for a sample of 111 respondents, a cut-off value of about 0.52 should be adopted. Thus, an item was retained in a factor only when the value of the load exceeded 0.52. Table 3 presents the loading in the factors of the 16 items retained.

Ii	VARIABLE (Indicators)	1	2	3	4	5	6	7
1	Knowing the business processes	0.833						
2	Knowing the business environment	0.764						
3	Being able to communicate in business language	0.606						
4	Being a support for other areas to achieve their goals		0.651					
5	Establishing relationships with the other areas of the organization - internal networking		0.623					
6	Having the ability to see the organization as a whole		0.562					
7	Exercising leadership throughtout the organization			0.832				
8	Using financial metrics			0.736				
9	Having experience in IT				0.831			
10	Being trained in IT				0.816			
11	Maintaining relationships outside the organization - external networking					0.816		
12	Mantaining a close relationship with suppliers					0.694		
13	Keeping the profile of the IT team suited to corporate needs						0.762	
14	Being able to develop IT planning capable of supporting the business						0.520	
15	Being able to evaluate the organizational impacts arising from new technologies							0.768
16	Seeking for solutions in line with business opportunities							0.729

Table 3 – Variables vs. Factor load of the Factors
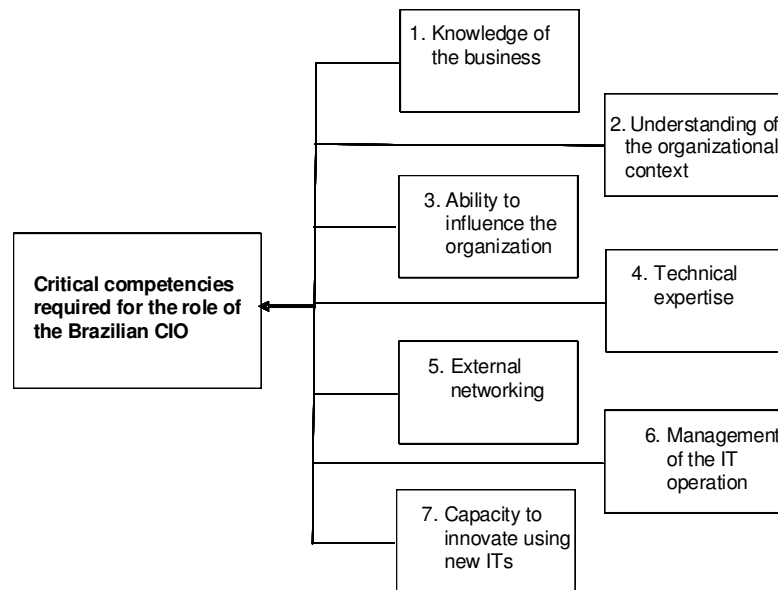**Source: Elaborated by the Authors**

In line with the suggestion of Hair et al. (2005), the test of discriminant validity was also carried out, where extracted variance greater than 0.5 was obtained for all factors. Thus, it was found that the indicators of a particular factor were not correlated with other factors.

The Meta-Model of the Critical Competencies Required for the Role of the Brazilian CIO

Thus, from the results obtained, one can then appoint the seven factors found, according to the indicators contained in each one, as shown below:

- Factor 1 – Knowledge of the business
- Factor 2 – Understanding the organizational context
- Factor 3 – Ability to influence the organization
- Factor 4 – Technical expertise
- Factor 5 – External networking
- Factor 6 – Management of the IT operation
- Factor 7 – Capacity to innovate using new information technologies (IT).

These results were then consolidated in Figure 1, creating the meta-model composed of seven groupings found in order to propose a nomological network (Trochim, 2004) to be tested in future studies.

Figure 1 – Meta-Model of the Critical Competencies required for the role of the Brazilian CIO
Source: Elaborated by the authors

FINAL REMARKS

The first implication that emerges from this work concerns Brazilian CIOs themselves, as they are indeed the main beneficiaries of this work. They should direct their own professional training towards those skills with greater opportunity for individual gain. In other words, based on the proposed meta-model, the CIOs must examine the roles they play in the organizations to which they belong. The meta-model of critical competencies required for the role of the Brazilian CIO can therefore be a roadmap for the assessment of points to be developed. For this, the CIOs should reflect on each of the critical competencies and on their impacts in their organization.

Organizations, in turn, may also use the meta-model of critical competencies required for the role of the Brazilian CIO as a way of assessing their current IT status and how its structure has influenced the modus operandi of the CIO.

In addition, HR professionals, as well as recruitment, selection, training and IT consultant companies can also avail themselves of the proposed meta-model of competencies. The proposed meta-model can also be very useful as a guideline for training tools for the CIOs in companies and in their recruitment and selection processes.

In fact, use of the meta-model of critical competencies required for the role of the Brazilian CIO could assist same, their organizations and even IT consultants as a means of assessing the applicability of certain models of management, IT governance, or of certain other models that may be suggested.

This work also provides material for the revision of academic curricula related to the basic training of IT professionals. The contents of the topics could be guided by the needs identified by the CIOs themselves.

Future Studies

This work may suggest a series of future studies, either based on the proposed meta-model, or on the revelations arising from its conclusions.

Qualitative analyses, based on the meta-model, could explore the issues raised here in greater depth. Thus, the understanding of each critical competency could be discussed and analyzed with CIOs or other organizational members involved with them – superiors, suppliers, peers and employees.

A survey of former CIOs could also be conducted. This new research could be implemented, following the example of Earl (1996), to establish whether the lack of competencies included in the meta-model interfered in any way in the evolution of their professional lives.

Finally, it is necessary to confirm the nomological network (Trochim, 2004) shown in Figure 1, adopting the same indicators already used in this work. From this starting point, two new samples should be sought. The first sample should be used to test the measurement model via confirmatory factor analysis. The second sample should be employed to evaluate the link between the factors and the professional performance of CIOs, via, for example, structural equation modeling or multiple regressions.

The field of knowledge associated with the critical competencies required for the role of the CIO will remain high on the agenda of research in Business Administration, since information technology has emerged as a key-factor for competitive advantage in various industries (Laurindo et al. 2001).

Thus, this paper seeks to contribute to a clearer understanding of the critical competencies required for the role of the Brazilian CIO.

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