Leadership in the Transition to Sustainable ICT Use: A Cross - Sectoral Study

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Abstract: *Faced with the technological development of companies and that of the New Information and Communication Technologies (NICT), and in view of the new socio - economic challenge, the successive deep international mutations resulting from globalization, it is impossible today to imagine our society without ICT[1], and organizations all over the world are confronted with an ever greater challenge. The use of and dependence on ICT is growing, as are the costs and the impact on the environment. How can we make more effective use of existing ICT architectures and put them to work for the organization's sustainable goals? The sustainable future may be in the hands of information and communication technology and organizational (ICT) leaders who have the knowledge and resources to deploy ICT in a conscious and intelligent way. In this research, ICT as a process is the focus. However, the three dimensions are in phase with each other and, therefore, the ICT process cannot be analyzed without the ICT product and without both, ICT as a behavior is not possible. This research shows that each organization conceives of sustainability in its own way depending on the sector to which it belongs. It also shows that there is a relationship between ICT issues and technological developments on how to design ICT to support the functional areas of the organization. Leadership then plays an important role in the transition to using ICT for the sustainable goals of each organization.*

Keywords: NTIC, Leadership, Transition, Sustainable development

1. Introduction

In this article, we conceptualize leadership in the transition to sustainable ICT use. Today, it is impossible to imagine our society without ICT.

Organizations around the world are facing a major challenge: the use of and dependence on ICT is growing, as are its costs and environmental impact. ICT is embedded in the buildings, cars and business processes of virtually every organization. They contribute to environmental contamination at all stages of their "life cycle": during production, use and disposal[3].

Hilty, Arnfalk et al (2006) [4] describe ICT in three dimensions, the first being the product dimension: the ICT product (cables, computers, keyboards, parts...). This dimension can be made more sustainable components, for example by reusing parts (gold, copper, etc.) and reducing energy consumption.

The second dimension of ICT is the process dimension (Hilty et al.2006); in other words, the users of ICT. They use the material produced by the production dimension to control business processes and serve customers.

The third dimension of ICT is the medium - to long - term behavioral effects of ICT, the adjustment of behavior (e. g., consumption patterns) or economic structures due to the stable availability of ICT and the services it provides (Hilty et al. 2006).

In the "product" dimension, sustainability mainly involves the issue of component reuse and issues such as low energy consumption, internal software optimization and so on, focusing on the production of the ICT products themselves.

In the process dimension, the sustainable focus is mainly on the use of hardware and/or software to support the internal business process in a more sustainable way. External processes can also be affected and modified in this respect. This research focuses on internal business processes and the sustainable goals of the organization.

The third dimension concerns the behavioral effects of ICT in the medium or long term. This dimension was not examined in this research in order to keep the complexity of this research within the time available.

The stakeholders involved in ICT issues are diverse, each with their own barriers, responsibilities and opportunities for deploying ICT for sustainability. The business, and in particular the organization's ICT leaders, is the most important stakeholder in the sustainable use of ICT. Business and ICT alignment is one of the biggest challenges.

This research aims to provide organizations with insight into the role that ICT plays and can play in the organization, combined with the desired attitude of leaders in transitioning to the use of ICT in support of the organization's sustainable goals. In addition, this research helps organizations to better define and use ICT more effectively to manage available resources more sustainably and better support sustainable goals.

ICT Adoption for Sustainable Business

State of research on the concept of sustainability

There is no universal definition of sustainability. Definitions of sustainability have varied over the past few decades, with many scholars arriving at contrasting definitions and a resounding number of concepts deviating

from the core principles of sustainability. There appears to be no consensus, which has hindered discussion due to the lack of consistency in defining sustainability.

To unite the international community and pursue sustainable development together, the United Nations created the Brundtland Commission, which was named after former Norwegian Prime Minister Gro Harlem Brundtland. The Brundtland Commission and the United Nations were created to respond to the global political consensus and to communicate the urgency of global policies that include the three main pillars of sustainable development5 (Goodland, 1995).

In 1987, at the United Nations World Commission on Environment and Development (WCED), the term "sustainability" was expanded to "sustainable development. The new report defined sustainable development as "development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs" (WCED, 1987, p.43).

Now, 35 years later, this definition is still relevant and has proven to be a critical tool for the development of sustainability globally, and has been cited repeatedly by scholars. With the vast majority of the literature referring to this statement, and although it may not fully cover the definition of sustainability, it has been adopted as the definition of sustainability for the purposes of this research.

In his article on Strategies for a Sustainable World, Hart (1997) [6] describes that in the 1960s and 1970s, organizations were still in denial about their impact on the environment. Years later, many organizations accepted this responsibility and began to become better stewards of the environment. According to Hart (1997), the challenge is to "develop a sustainable global economy: an economy that can carry the planet indefinitely."

Corporate social responsibility, also known as "sustainable business", refers by definition to the activities of an organization as a voluntary demonstration of the inclusion of social and environmental aspects in its activities and in its interaction with all its stakeholders (Van Marrewijk and Werre 2003)[7].

In this light, Van Marrewijk and Werre (2003) argue that the organization and society must work together on common norms and values. Both should benefit from the choices made"; "Temporary gains for one compromise the long - term prosperity of both" (Van Marrewijk and Werre 2003).

An organization must choose which social issues it wishes to address; it is virtually impossible for an organization to address all social issues at once (Porter and Kramer 2006). According to Porter and Kramer (2006) [8], the dependence of organizations on society takes two different forms; in the first form, the company diverts from society through its internal activities and linkages, in the second form, the organization not only affects society, but also external social conditions.

Porter and Kramer, then, define this as "outside - in links". To do this, one must look from the outside - in, examining the social impact on the competition.

To this end, a business case is therefore needed to justify and support sustainability to the business community in order to integrate the cause of sustainability into the business development objectives.

The business case refers to the various financial and other reasons why companies pursue CSR strategies and policies. In developing this analysis, a business case for sustainability is made through analysis of the concept of corporate social responsibility (CSR).

In their article "The Business Case for Corporate Social Responsibility: A Review of Concepts, Research and Practice" Carroll and Shabana (2010) [9] explored the arguments that drive organizations to engage in CSR. Six arguments for CSR were identified in their research:

1. In the business world, it is mainly in one's own interest to be social in the long run
2. Preventing and Preventing Government Regulation;
3. Organizations have the resources to act (management talent, capital);
4. Others have failed to do something, let the companies try;
5. Anticipation and planning are preferable to reaction.
6. Companies need to engage in CSR because the public is a strong supporter of CSR and can therefore give them a competitive advantage.

Carroll and Shabana (2010) outlined five objections for an organization not to engage in CSR, these arguments are:

1. Social issues are not the responsibility of companies, these problems should be solved by the functioning of the "free market";
2. Organizations are not equipped with the right tools to act against social activities;
3. CSR dilutes the number one goal of companies, which is to make a profit;
4. Organizations already have enough power, why should we let them develop even more power as social forces;
5. The pursuit of CSR reduces the competitive power of organizations worldwide.

These pros and cons show that there are arguments for and against sustainability, although one will certainly have more impact on the future of our planet than the other.

In 1995, John Elkington first defined the triple bottom line (TBL[10]) in his book, *Cannibals with Forks: the* Triple Bottom - Line *of 21st Century Business*[11].

Elkington sought to go beyond the traditional accounting measures of profit, return on investment and shareholder value, focusing on the broader environmental and social dimensions by defining three dimensions of sustainability through the 3Ps, "People, Planet and Profit, " which

constitute the TBL, effectively measure and capture the ecological, economic and societal values of an entity (Langdon, 2010)[12].

In another analysis, according to the Business in the community report (2011) [13] on the business model of corporate responsibility, corporate responsibility would not be a trade - off between People, Planet and Profit. Organizations need to strengthen the links between social and economic progress and seek innovative ways to integrate corporate responsibility into their business practices, into their core business (Business in the community 2011).

ICT can then play an important role in making organizations more sustainable. This requires a new role for ICT and the people around it to go beyond simply reducing energy consumption.

ICT for sustainability

In a study published on July 22, 2011 entitled "Sustainability Innovation Key Initiative Overview, Gartner explains that organizations are increasingly using "sustainable business models" that focus on organizational performance (Gartner 2011) [14].

Often these models are broken down into "business value" reflecting a level of efficiency through increased transparency and investment in social capital. These processes are linked and spread throughout the organization through sustainable integration and corresponding priorities.

Through this integration, the organization can move beyond the "internal CSR compliance model," which typically focuses on the trade - off between profitability and profit.

In this sense, ICTs can have both positive and negative effects on people and the environment during their life cycle and use. Three levels can be distinguished according to Hilty et al.2006.

The first level refers to primary effects that define the physical presence of ICT. For example, the environmental effects of production, use of ICT, recycling of equipment and disposal of used equipment.

The second level refers to the "secondary" effects defining the different indirect environmental impacts of ICTs due to their ability to modify processes such as production or logistics processes, resulting in a change in their environmental impact.

The third level refers to the "tertiary" effects defining the environmental effects in the medium or long term, the adaptation of behaviors such as consumption habits. Or economic structures due to the stable availability of ICT and the services they provide.

The direct environmental and social impacts of the ICT sector can be assessed using "benchmarking studies". The

indirect or third order impacts of ICT products are more difficult to assess.

The main direct environmental impacts of ICT products are due to the use of chemicals in their production, which, combined with energy consumption and the use of electronic products, completes the direct impact overview[15].

According to the analysis of Hilty et al (2006), ICT can be divided into three dimensions:

1. ICT as a product;
2. ICT as a process;
3. ICT as a behavior.

The "Product" dimension of ICT reflects the impact of ICT on the environment at two levels, on the one hand the life cycle of ICT equipment and on the other hand the use of the equipment and applications.

Furthermore, the level of impact of ICT on the environment depends on how ICT is produced and used in practice. One of the positive effects of ICT on the environment is that ICT can be used to produce greener products, make delivery and production more efficient, etc.[16].

The process dimension of ICT presents the influence of ICT on growth and innovation as a major role of ICT. For the past few decades, the contribution of ICT to GDP has been increasing, and the share of output growth in other sectors is mainly related to the ICT sector (Martinuzzi et al.2011).

"Green and sustainable ICT solutions make this possible through integrated solutions. This includes, for example, intelligent decision structures in software, the collection, enrichment and evaluation of data through software, and more efficient use of energy. This can be done, on the one hand, by using equipment and data centers that save energy, cooling, etc., but also by adjusting production equipment as efficiently as possible, so that a machine can produce more products with less consumption per delivered product. ICT organizations will continue to be pressured to measure, improve and report on the energy efficiency of the entire infrastructure" (Gartner 2012).

Finally, the "Behavior" dimension of ICT defines a new perspective where ICT represents the relays in the learning process by inscribing new behaviors in the organization's identity.

On this subject, the information contained in the literature is not yet complete, Vaccaro and Madsen (2009) [17] in their article "Corporate dynamic transparency: the new ICT - driven ethics?" conducted an exploratory research on the potential of ICT to support transparency initiatives and to enable the dissemination of information on certain ethical issues, and thus, positively influence the behavior and decisions of consumers.

Although the information in the literature is not yet

complete, the topic of transparency is expected to play a role in the transition to sustainable ICT use. Partly because research by Vaccaro and Madsen (2009) shows that transparency can be considered the new relevant contemporary ethical issue.

In their study, "A Way Forward: Sustainable ICTs And Regional Sustainability, " Hearn et al. (2005) [18] examined the role of ICTs in sustainability.

They come out with the conclusion that an organization can be affected positively as well as negatively by the use of ICT in productivity, ICT will then impact at different levels various processes and functions, it can be for example:

1. Reduce the transaction costs of an organization by reducing the cost of the information component.
2. Use distributed systems, intranets and web services to change the impact on the organization and its stakeholders.
3. Make products more "intelligent" by adding information. This can make these products more interesting for end users.
3. Develop entirely new digital content and applications.

ICT can, in this case, bring major improvements in the field of energy reduction, which sometimes gives it a connotation of supremacy and therefore a negative one.

Thus, when deployed over time, the use of ICT can have different effects on the environment. This is influenced by external factors, such as gross domestic product, population, number of households, labor force, total number of employees, etc." (Hilty et al.2006).

The opportunities for sustainability programs in ICT lie in the translation of general principles of social sustainability (such as usability and privacy). These opportunities lie in both design and production decisions that are of great interest to developers and users."[19]

Another factor is that many initiatives are largely ICT - driven rather than business - driven, resulting in organizations serving ICT rather than ICT serving the organization. Decisions about ICT should be based on the positive and negative effects of ICT (Hilty et al. 2006).

According to Vaccaro and Madsen (2009), ICT can provide an information platform, promoting cooperation in the market, characterized "*by a mutual exchange of information between firms and their customers*".

stakeholders". Dynamic information sharing through ICT encourages companies to demonstrate greater openness and accountability, and more transparent operations that benefit both companies and their stakeholders.

The authors explain that dynamic transparency is desirable and more effective than the more common static transparency, where information dissemination is one - way. Full transparency has great ethical value, even if the release of information is limited by concerns about

privacy, security, and pressure from financial backers and potential competitors.

2. Sustainable leadership for a world in transition

2.1 Positioning Leadership in Sustainable Entrepreneurship

Leadership theories address how leadership emerges, how it affects people's attitudes and behaviors, and under what conditions and through what processes it operates.

The main theories of leadership can be divided into two categories:

(1) Personalistic theories: Until the 1960s, a person's stable characteristics were considered the central factor in success commonly referred to as "great man theories." The link between personality theories and leadership success is currently experiencing a resurgence in popularity. It is considered empirically proven that successful leaders are characterized by extroversion, conscientiousness, openness, emotional stability, a sense of humor, and intelligence.[20]

(2) Behavioral theories: In the 1940s and 1950s, interest focused on the behaviors of leaders that can result in organizational effectiveness or ineffectiveness. Studies at Ohio University resulted in two overarching categories: - "Employee orientation", in which a leader supports subordinates and takes their needs into account, and - "Task orientation", in which a leader aligns his or her behavior toward task accomplishment and goal achievement. While employee orientation contributes more to leader satisfaction and motivation, both dimensions are relevant to leader, team, and organizational performance.[21]

(3) Contingency theories: To better account for the complexity of human behavior, these theories specify the conditions under which leaders' personal characteristics and behavior patterns become effective. The contingency model of leadership is particularly prevalent (Fiedler, 1967) and assumes three situational characteristics that influence the leader's ability to control the situation. Control, the quality of the relationship between the leader and the work group, and the power of the leader's position and task structure. From the combination of these factors, it is theoretically inferred that employee - oriented or task - oriented leadership is effective in this situation.[22]

(4) Theories of power and influence: Leadership and power are not synonymous. Although good leaders can exercise influence through power, having power is not enough to lead well[23]. Leadership is seen here as a process of social influence between leaders and followers. Leaders exercise power through reward, punishment, legitimization, expertise and identification, but also through charisma in the form of symbolic, visionary and inspirational action.[24]

(5) Values - based leadership theories: Values - based leaders are characterized by a genuine interest and concern for the needs of those they lead, authentic moral values that underlie leadership behavior, and a

conscious role modeling function on the part of the leader.[25]

(6) Negative approaches to leadership: The personality or behavior of leaders can, in extreme form, endanger the well - being of those being led. Relationships in the company are repeatedly influenced by a leader in a way that is considered hostile or obstructive, job and life satisfaction and job performance suffer.[26]

Following this vast and complete theoretical analysis of the concept of leadership, it is now important to delimit the field of our study in order to focus on the characteristics of the good leader in a context of ITC use.

To this end, Quinn and Dalton (2009)[27] conducted exploratory research on how senior leaders can use leadership to achieve sustainable goals. The research shows that leaders who want to pursue a sustainability agenda must pay attention to how sustainability is "framed" and how it is introduced into the organization. This requires leaders to build certain capabilities into their systems. These include training, communication, HRM (rewards, performance) and the ability to adapt the corporate culture that supports sustainability, as stakeholder engagement is critical to its success. Leaders must guide the transition to sustainability by creating and maintaining commitment within the organization to implement sustainability principles.

At the conclusion of the study Quinn and Dalton (2009) provide us with the following advice regarding the transition to sustainability:

1. How the leader provides sustainable direction is important. Being positive, engaging and enthusiastic in introducing the concept of sustainability has an impact on employee perception.
2. Leaders must use the language of the business to set a sustainable direction and create alignment.
3. Ideas for implementing sustainability are not only a task for the organization's leaders, but a task for all stakeholders (employees, suppliers, partners and customers). Encouraging ideas from all stakeholders related to the organization is a task for the organization's leaders.
4. By creating alignment, there is no need for a "right time, right place" to begin the transition to sustainability.
5. Make sustainability an integral part of the organization
6. Ensure knowledge sharing and maintain engagement across the sustainability dimension; this creates new and stronger networks and promotes the innovation potential of the organization.

In a 2004 article in the Magazine, Simon Zadek, CEO of the UK - based Account Ability Institute, explains that the leader's thoughts must go beyond protecting his or her own reputation. The leader must focus on redesigning the organization and its business processes so that the organization can truly make a difference to society.

Therefore, an innovative work climate can also help the ICT manager to improve the innovation capacity and the reactive flexibility of the organization.

According to Watts and Henderson (2006), a climate conducive to innovation consists of stated expectations combined with approval and practical support for efforts to introduce new and improved ways of doing things[28].

They argue that a "team climate" is important for innovation in management, research and development teams. The ICT innovation climate can therefore be defined as the perception of innovative ICT policies, processes and procedures.

2.2 Research Questions

The previous literature review shows that the challenge is significant. Within companies, the achievement of sustainability goals is reflected in the difficulties of implementing sustainable strategies by the various decision makers and managers of companies, combined with the development of ICT in recent years, the emergence of innovations and their integration into business processes could provide relief (Gartner 2011).

This research focuses on the influence of ICT issues and ICT technology developments on the business model in the transition to sustainable ICT use within different sectors. It focuses on the influence of managers on this process.

The objective is to help organizations identify the transition phase in which the organization's ICT is at the time of the study. And to identify the steps that can be taken to deploy ICT in support of the organization's sustainable goals.

This research aims to provide organizations with insight into the role that ICT plays and can play in the organization, combined with the desired attitude of leaders in transitioning to the use of ICT in support of the organization's sustainable goals. In other words, this research helps organizations to better define and use ICT more effectively to manage available resources more sustainably and better support sustainable goals.

The purpose of this exploratory study is to obtain information on:

- The current role of ICT in an organization;
- The definition of sustainable ICT;
- The definition of sustainable ICT use;
- How sustainable use of ICT can be part of an organization's CSR strategy;
- How organizational leaders can contribute to the sustainable use of ICT;
- What is the tipping point for an organization to move to using ICT for sustainability;
- The influence of technological issues and developments on functional areas;
- The effects of sector and organizational leadership on the transition to deploying ICT to promote corporate social responsibility.

Based on the objective and the problem statement, the central question is:

How can organizations make the transition to using ICT to promote organizational sustainability? What role does leadership play in this?

What influence do technological issues and developments have on this transition?

The following sub - questions can be defined:

1. What is the current role of ICT in an organization?
2. What is the definition and operationalization of sustainable ICT use?
3. What are the challenges of ICT?
4. What do the leaders of Dutch organizations think about ICT issues?
5. How can the use of ICT for sustainability become part of the strategy of Dutch organizations?
6. How can organizational leaders contribute to a more sustainable use of ICT?
7. What is the business model for sustainable ICT use?
8. What is the tipping point for an organization to transition to using ICT for sustainability?
9. What are the influences of ICT technological change on the transition?
10. What is the role of management and leadership in ICT deployment and the transition to sustainable ICT deployment?
11. What is the desired role (of management) in the transition to sustainable ICT use?

3.Methodology and Data Collection

3.1 Problem and methodology of the empirical study

At the end of our literature review, our problem consists in conceptualizing leadership in the transition towards a sustainable use of ICT. Today, it is impossible to imagine our society without ICT. A particular look will be taken at the adoption of ICT for sustainable business.

The qualitative research method seemed to us to be the most suitable for dealing with the problematic of the article.

Our study was conducted in the form of semi - structured interviews. The collection of information through semi - structured interviews allows us to focus the discourse of the interviewees on themes defined beforehand and recorded in an interview guide constructed in a uniform manner despite the diversity of the actors.

3.2 Conduct of the qualitative study

To achieve our research objectives, we adopted a qualitative, exploratory approach based on the following three data collection methods: observation, documentary analysis and in - depth interviews. We used a triangulation of data, the objective being to understand generational diversity within organizations by studying it from more than one point of view? (Pourtois and Desmet, 1988).

The first phase of our research consisted of a field observation study. This choice is explained by the absence of a common theoretical framework to describe and understand the way ICT is adopted in a company. The interaction with the actors helped us to identify deep representations of the phenomenon. Note that the observation was done "in real time". The second stage of this research focused on the analysis of documents and publications describing the characteristics of each company. This step allowed us to acquire "*as complete a view of the problem as possible*" (Evrard et al, 2009). However, our main source of data was the semi - structured interviews.

We conducted 24 interviews, seeking the greatest possible diversity of interviewees. The threshold of semantic saturation was reached at the 20ème interview, the four following interviews did not provide more information. Beforehand, we developed an interview guide based on the literature. Our interview was constructed in a uniform manner so that the questions could be asked of managers, non - managers, executives and human resources professionals. It is composed of two parts: a first part to determine the concept of sustainability and a second part, related to the adoption of ICT within the company. Two types of interviews were used. A first series of six semi - structured interviews was conducted with the company's managers and HR managers. They focused on the concept of sustainability and the adoption of ICT in new businesses on the other hand. A second set of semi - structured interviews was conducted with eighteen employees regarding the role of leadership in the adoption and implementation of an effective transition to a sustainable approach in the exploitation of ICT.

We selected people of different profiles and generations. The diversity of the informants' profiles and generations, as well as the positions they hold, seem to give more relevance and validity to the comments collected. The interviews lasted on average 45 minutes. They were recorded using a tape recorder and then transcribed. After transcribing the interviews, we were able to obtain a *corpus of* 24 testimonies.

Table 3 summarizes the characteristics of our sample. Thus, the use of NVIVO software appeared relevant for the thematic analysis of the data.

3.3 Description of the sample

We opted for semi - structured multi - stakeholder interviews in order to diversify opinions and points of view. Since sustainability is a concept that concerns several actors. The population interviewed is drawn from various profiles and generations to strengthen the internal validity of the study and ensure the representativeness of our sample in the sense of Campbell and Stanley (1966). Among the interviewees all belong to the service sector.

Table 3: Detailed Characteristics of the Qualitative Study Sample

Code	Professions	Age	Type	Diploma
1	HR Manager	38	Woman	Bac+5
2	HR Division Manager	43	Male	Bac+5
3	Training and skills manager	40	Male	Bac+5
4	HRD	44	Woman	Bac+4
5	Head of the Coordination and Organization Division	29	Woman	Bac+3
6	HRIS Engineer	36	Woman	Bac+5
7	ISD	55	Male	Bac+5
8	Compliance Officer	46	Male	Bac+5
9	Innovation Project Manager	44	Woman	Bac+5
10	Project Manager AMOA	39	Male	Bac+5
11	ISD	37	Male	Bac+5
12	ICT Manager	24	Woman	Bac+5
13	Security Technician	28	Male	Bac+3
14	Processing agent	32	Male	Bac+2
15	Security Technician	26	Male	Bac+3
16	Strategy Manager	25	Woman	Bac+3
17	Intern	38	Male	Bac+2
18	Trainer	47	Male	Bac+7
19	IT Engineer	42	Male	Bac+5
20	IT Engineer	24	Woman	Bac+5
21	Executive Assistant	31	Woman	Bac+2
22	Research engineer	38	Male	Bac+5
23	Development and process team manager	36	Male	Bac+5
24	Project Manager	23	Woman	Bac+2

Table 4: Overall description of the sample

Function	Number
Managers (CIO/HRD)	3
Executive Assistant	1
Responsible for	5
Trainer	1
Management employees	5
Project Manager	3
Technician	2
Engineer	3
Intern	1
Total	**24**

4. Results of the Qualitative Study: Content Analysis

The previous literature review shows that the challenge is significant. Within companies, the achievement of sustainability goals is reflected in the difficulties of implementing sustainable strategies by the various decision makers and managers of companies, combined with the development of ICT in recent years, the emergence of innovations and their integration into business processes could provide relief (Gartner 2011).

The transition to using ICT for sustainable organizational goals is the focus of this research. The research is limited to the transition and identification of the use of ICT for sustainable organizational goals in the sectors studied.

The sector in which the organization is located can also have an influence on the transition. This research focuses on ICT as a process with the ICT product as the basis. The ICT product as an independent component and ICT as a behavior are not considered in this research. Because of the dependencies between the different dimensions, the literature review briefly describes what they entail.

In order to conceptualize this process, we rely on an exploratory case study conducted by Chun and Mooney (2009) 29 and communicated in the article "CIO Roles and Responsibilities: Twenty - Five Years of Evolution and Change" through which they demonstrate that the more important the role of information systems is in organizations, the more important the role of the CIO (Chief Information Officer) is. We have therefore integrated the dimension of leadership into our analysis of the study as a vector for good change management. This notion was represented in our sample by the various leaders (CIO/HRD...) and characterized by questions directed around the processes aimed at improving management and leadership. According to the responses, the role of the CIO consists of two different dimensions. On the one hand, there is an executive level manager who focuses on the organization's strategy and business processes, and on the other hand, a technical manager who focuses on cost reduction and ICT architecture and techniques.

Executive - level CIOs with a stabilized and standardized ICT infrastructure can focus their efforts on the optimal use of resources with an emphasis on added value for the business. As a result, the CIO is increasingly involved in the development and implementation of business strategy and process innovations.

The ability of a CIO to adapt his or her role depends on two factors. First, the extent to which a company has standardized and integrated its ICT infrastructure.

Second, the extent to which ICT is central to the business in terms of the product, service, business process or competitive position to be produced.

Thereby, Chun and Mooney (2009) divided the role of the CIO into four roles based on the interviews conducted.

First, the CIO is likened to a Nurse / Firefighter; in that CIOs are ICT managers or executives whose main objective is to determine what the pressing ICT issues are.

Second, the CIO is likened to the landscape cultivator, in that the CIO is primarily responsible for the technical improvement and streamlining of enterprise data by maintaining and integrating existing applications and processes.

Third, the CIO is equated with the opportunity seeker, in that the CIO is primarily engaged in seeking opportunities with the primary objective of improving business processes inside and outside the company.

Fourth, the CIO is equated with the innovator/creator, in that he or she focuses primarily on innovation and new opportunities, implementing new ICT systems for the entire organization.

5. Conclusion

As an economic agent, the organization is part of society. The organization has a clear vision for the future in terms of sustainability and is currently transitioning to a phase in which sustainability is more integrated into the organization's strategy and operations. The interviews show that the organization's employees are aware of the organization's sustainable goals but do not have the exact details.

The literature review shows that the organization is an outward - looking organization. The organization uses ethical knowledge to do this and uses the necessary knowledge from its network. The organization is part of the government and does not aim to make a profit.

The literature review describes the organization's leaders as group - oriented and motivational. It can be inferred from the interviews that leadership within the organization was interpreted in different ways.

For example, there are departments that are set up from the top down, where the manager determines what and how the employees' work is done, and on the other hand, there are departments where the employees are involved and coached in their work.

ICT is very important for the organization, according to the interviews, without ICT it is not possible to process administrative documents, centralize information, generate products or deliver orders requested...

Management also depends on ICT, without ICT no availability reports or other management information is possible. ICT as it is currently used meets the expectations of the organization.

The organization is sensitive to the ICT issues analyzed, with issues such as legislation and regulations and operational costs of ICT having a clear impact on the operation (availability) and design of ICT in the functional areas of the organization. The literature review shows that each department uses its own applications.

A transition to centralization and standardization of applications has begun. By using standard ICT techniques to integrate processes, the reliance on ICT is increasing, so that ICT is becoming more central to the organization. Respondents indicate that applications are indeed being standardized and that this was largely achieved in the early days before the health crisis.

The organization can be classified based on the theoretical model, although there is a clear difference between the results of the document analysis and the interviews.

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