Intellectual Capital Management in Egypt's National Centre for Educational Research and Development (NCERD): A case study

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Abstract

With the challenges presented by the knowledge economy, research centers play an increased role in the creation and dissemination of new knowledge that is crucial for informing policy and practice in different fields.

Therefore, importance should be given to evaluating and developing these research centers' practices for managing their resources especially the intangible ones- commonly known as Intellectual capital (IC).

The significant role of effective (IC) management in building organizational capacities for improvement, especially for knowledge-intensive organizations, is well documented. However, studies that have been done to investigate the IC management practices in research centers, especially in developing countries, are rare and not found in the field of education. Hence, this study seeks to bridge this research gap by investigating IC management practices within the National Center for Educational Research and Development (NCERD) in Egypt.

The study also aims to propose some operational recommendations that could promote more effective IC management in the NCERD whereby improving its performance .

The paper adopts case study as a qualitative research method.

Triangulation of data drawn from multiple sources of evidence are used, namely document analysis, participant observation, and interviews with a sample of the researchers working in the Center. A deductive coding approach to data analysis

was used whereby classification and coding of data was based on the theoretical model developed from the literature review.

 A narrative report was presented as congruent with qualitative methods. Findings suggest that the three IC components are poorly managed in the NCERD. Operational recommendations are suggested to promote IC management practices in the NCERD, and as such enhance the NCERD's role in informing educational policy and promoting evidence-based practice in the educational institutions. The suggested recommendations keep up with Egypt's Vision 2030 towards maximizing the intangible assets in public organizations through adopting effective knowledge management (KM), and human resource management (HRM) systems.

Keywords: Intellectual Capital Management, Improving Organizational Performance, National Center for Educational Research and Development, Egypt, Case Study.

Introduction

In a knowledge-based economy, the term intangible assets have been emphasized by many organizational scholars as a main source of competitive advantage. In contrast to physical and financial assets, intangible assets are often intellectual in nature (Edvinsson & Malone, 1997).

According to Bounfour (2015), Madhani (2009), and Hall (1992), the term intangible assets encompasses knowledge creation and dissemination, intellectual property, skilled employees, organizational learning, strategic vision, organizational culture, databases, marketing and advertising, internal and external networking, image, identity, and organizational reputation, among others.

As a result of the scholarly interest in intangible resources especially organizational knowledge and learning resources as fundamental strategic assets for organizations' competitiveness and value creation (Senge, 1990; Nonaka, 1994; Teece, 1998), the intellectual capital (IC) construct has been introduced and developed as a new interpretative category addressing knowledge-based organizations and a synonym for intangible resources and knowledge capital (Lerro, Linzalone, & Schiuma., 2014; Bounfour, 2015). Bontis (2002) described IC as the collective knowledge that is embedded in personnel, organizational routines, and network relationships of an organization with all its stakeholders.

Definitions provided by most researchers for IC breaks the construct into three components: Structural Capital (SC), Human Capital (HC), and Relational Capital (RC) (Leitner & Warden, 2004; Sánchez & Elena, 2006; Martínez-Torres, 2006; Cañibano & Sánchez, 2008; Ramírez-Córcoles, Tejada, & Manzaneque, 2016).

Sánchez, Elena, & Castrillo (2009), and Secundo et al. (2010) later used the

term Organizational Capital (OC), instead of Structural Capital (SC), to reflect the wider nature of the organizational assets, and therefore to include factors relevant to both organizational infrastructure and knowledge .

Numerous researchers have reported the significant impact of IC management on organizational aspects such as competitive advantage (Chahal & Bakshi, 2015, Liu, 2017), performance improvement (Smriti and Das, 2018; Alfiero, Brescia, & Bert, 2021), organizational innovation (Almutirat, 2020), knowledge creation and knowledge sharing (Sharafi, Moghadam, & Sharafi, 2012), organizational reputation (Ginesti, Caldarelli, & Zampella, 2018), and organizational commitment (Chen, Wang, & Sun, 2012).

As a result, a significant and increasing number of studies have been conducted to offer frameworks on how to effectively manage, measure, disclose, and sustain IC as a key source of organizational improvement.

Though most of the knowledge management and IC endeavors began in private organizations, a growing interest has extended to public ones, especially knowledge-intensive organizations such as universities and research institutions because of their substantial role in nations' growth, innovation, and economic development.

For Toof (2012), and Kumar (2017), the challenges presented by a knowledge economy force scientific research centers to play an increased role of providing new knowledge to constituents and stakeholders for beneficial application, and marketing it to a broader consumer network.

According to Leitner and Warden (2004), Sánchez and Elena (2006), Ramírez- Córcoles (2013), IC management is specifically important for universities and research centers as their main goals are the production and dissemination of knowledge, and their funds are mainly invested in research, innovation, and human resources.

Therefore, both their inputs as well as their outputs, which are incorporated in

knowledge, research results, publications, and productive relationships with stakeholders, are mainly intangibles .

Consequently, an increasing number of studies have been conducting to investigate IC impact on promoting performance in universities as typical knowledge-intense organizations.

A large part of these studies reported that effective IC management, measurement, and disclosure positively affects the performance of universities, improves internal management, helps universities better manage knowledge creation and dissemination to stakeholders and society at large, and facilitate benchmarking analysis (De Matos Pedro, Alves, & Leitão, 2020; Cricelli et al., 2018; Awan & Saeed, 2015; Rashid & Alzaidi, 2014; Shojaie & Barani, 2013, Ramírez- Córcoles, 2013; Sánchez, Elena & Castrillo, 2009; Sánchez & Elena, 2006). Findings of Secundo et al. (2010) suggest that adopting IC management framework provides universities with a better understanding of the internal and external issues, while Kia, Danaei and Normohammadi (2013) reported that effective IC management advances organizational entrepreneurship.

In research institutions, Loyarte et al. (2018) presented a model for the calculation of IC as applied to a research technology center (RTC) working in the ICT sector.

The suggested model aims to improve the strategic and technological decisions within the center and enhance the quality and value of the R&D projects. Tafazzoli et al. (2020), investigated the impact of HC on IC in health research centers in Tehran.

Findings revealed that HC has a substantial impact on effective IC management within these centers.

Among the components of HC, researchers' attitude and motivation had the highest weight.

In the Egyptian context, many studies investigated the IC construct in higher education institutions.

Korany and Ateeky (2012), Mahmoud (2018), and Salem (2020) proposed suggested perspectives for IC management in the Egyptian universities to help achieve competitive advantage.

Findings of Radwan (2019) showed a positive relationship between IC components and universities' performance. Human capital is reported to have the highest influence over the universities' performance, followed by the structural capital, then the relational capital. Ahmed, Nokhal & Abdulmajid (2018) indicated that applying IC information system in measuring and evaluating the performance of Egyptian governmental universities positively affect their performance as well as their ability to compete globally. Relational capital information was found to be the most important IC variable in measuring and evaluating the performance in Egyptian governmental universities.

Elkerdawy (2014), on the other hand, attempted to measure the impact of pull and push factors of brain drain on the development of intellectual capital in Egyptian public universities and reported that push factors from Egyptian universities were more influential in brain drain than pull ones of Saudi universities .

Bezhani (2010), Pérez and Warden (2011), Elena and Leitner (2013) argued that though research organizations should be active in implementing IC approaches because they rely heavily on intangibles in achieving their main purpose of producing and disseminating knowledge, few of these organizations have institutionalized an organized IC management and reporting systems, most of which have been adopted on a voluntarily bases. Additionally, Bisogno et al. (2018), and Secundo,Lombardi, and Dumay (2018) stressed that most studies that have sought to investigate IC

management, measurement, and disclosure in education have been conducted in the context of universities.

In contrast, studies that have been done to investigate the IC management practices in research centers, especially in developing countries, are rare and not found in the field of education .

Similarly, research on IC in the Egyptian educational context deals mainly with universities and schools; no studies sought to examine IC management in research centers despite the many challenges they face due to the economic, political, socio-cultural, and technological context where they work.

Common challenges facing research centers in Egypt include: lack of financial autonomy, poor empowerment of young researchers in managing research institution, lack of intellectual property policies, low level of awareness of academic integrity among researchers, inadequate technological infrastructure, weak efforts exerted on the part of researchers and research institutions for building international partnerships or making best use of funding opportunities, a continuous drain of distinguished researchers to West and Gulf countries, and limited publications in international journals especially in the fields of humanities and social sciences (Ministry of Higher Education and Scientific Research, 2019).

These challenges would negatively affect Egyptian research centers' ability to fulfill their designed roles, decrease their capacity for developing effective IC management and thereby, limit their ability for building and sustaining competitive advantage nationally and internationally .

With regard to the educational research centers in Egypt, a few studies were conducted to promote their performance.

Kotait (2016) aimed to explore the foundations of developing the performance of educational research centers in Egypt using knowledge management approach.

Azzazi (2017) sought to re-engineer the management processes in the educational research centers utilizing the experiences of some countries .

Other researchers focused particularly on the National Center for Educational Research and Development (NCERD); the main government research consultancy for the Ministry of Education and Technical Education (MoETE) in Egypt.

NCERD aims to create, disseminate, and apply new knowledge whereby informing educational policies, promoting evidence-based practice in educational institutions, and finding solutions to the problems that confront practitioners in Egyptian schools.

Ghoneim (2012) sought to explore the availability of the dimensions of the learning organization in the NCERD and proposed some recommendations to promote them to improve the Center's performance.

Zaghloul (2018) proposed a strategic map for the NCERD, while Kasem and Nawwar (2020) investigated the challenges that hinder the Center's contribution in educational policy making and proposed some mechanisms to overcome these challenges .

Though the MoETE asserts its orientation towards improving the performance of the affiliated educational research centers to enhance their role in developing the education system (Ministry of Education, 2014), findings of Mostafa and Nawwar (2020), and Zaghloul (2018) reported poor quality services provided by the Center to its stakeholders, and ineffective role in informing policy and practice in the Egyptian educational setting. Findings of Kotait (2016) revealed that a lack of fund is a main obstacle in front of conducting quality research in the NCERD.

Azzazi (2017) reported that not having the NCERD's research published in rigorous refereed journals, and absence of an English language version of the NCERD's website negatively affect its image and academic reputation.

Given the multiple challenges Egyptian research centers face as well as the highly competitive environment where benchmarking analysis and international rankings of universities and research institutions are increasing, Egyptian research centers are forced to develop their performance to compete for the potential benefits a highly ranked research institution could enjoy. Hence, research institutions in Egypt should work proactively to promote effective management of its intellectual and knowledge assets as a powerful drive for achieving competitive advantage and raising their presence in world rankings, the NCERD is no exception.

In addition, importance should be given to examining and developing quality performance of such research institutions to enhance their fundamental role in promoting evidence-informed policy and practice to benefit the public.

Accordingly, this paper seeks to bridge this research gap and investigate the IC management practices in the NCERD in Egypt and suggest recommendations that could promote more effective IC management whereby improving the NCERD's performance and advancing its role in the Egyptian educational setting. This study could also raise Egyptian research institutions' awareness about the importance of voluntarily identifying, measuring, and reporting on IC assets, and encourage them to build their own IC management model for better governance and achievement of their strategic goals .

The paper is structured as follows: a literature review explores the IC construct and its importance in knowledge intense organizations, a profile of the National Center for Educational Research and Development (NCERD), the study's research method, findings, discussion, and conclusions.

2.Literature Review

2.1.Intellectual Capital (IC) Concept and Components

The IC Concept has its origins in approaches that focused on internal organizational resources – mainly those intangibles in nature – as a main source for competitive advantage such as a resource-based approach, knowledge creation dynamics, and an emphasis on learning organizations (Bounfour, 2015).

According to the resource-based approach to organizational performance, building competitive advantage and creating value to stakeholders depend mainly on a set of internal resources and capabilities (intangibles), as well as the ability of the organization to effectively manage them (Wernerfelt, 1984; Aaker, 1989; Barney,1991; Hall, 1992).

Additionally, organizational knowledge has been viewed as one of the most important intangible strategic assets in creating and maintaining competitive advantage since the early 1990s.

Importance of knowledge creation and dissemination processes within the organizations has been stressed by Nonaka and Takeuchi (1995), and Grant (1996).

For Bontis (2001), the new paradigm for sustainable competitive advantage is tied to individual workers' and organizational knowledge.

Therefore, leveraging knowledge is the main driver for superior organizational performance. This perspective to knowledge and its significant role in organizational excellence is viewed as an extension to the resource-based view RBV; known as knowledge-based view (KBV) (Kong & Prior, 2008) .

Simultaneously, with the wide spread of Knowledge Management (KM) construct, the term Learning Organization (LO) was coined and received intensive interest among scholars. Senge (1990), and Day (1992) suggest the

organizational ability to learn is a main sustainable competitive advantage. A learning organization is viewed as one that has an organizational structure that facilitates learning among all members and teams in a way that accelerates change management efforts (García, Lloréns, & Verdú, 2009).

All the foregoing growing focus on the decisive role of intangibles, knowledge, and learning as a source of organizational excellence in a knowledge-based economy, as well as the increasing focus on human resources as knowledge makers, whose abilities, skills, and knowledge have been viewed as the genuine source of adding value and generating innovation within organizations, have paved the way for the emergence of the Intellectual Capital (IC) concept .

A wide range of definitions have been given to IC. For Manzari et al. (2012), IC are the assets relating to employee knowledge and expertise, customer confidence in the organization and its services, brands, information systems, administrative procedures, as well as the efficiency of organizational processes. Miller (1999) describes IC as the sum and synergy of a company's knowledge, experience, relationships, processes, innovations, market presence, and community influence .

Though the terms intangibles, knowledge assets, and IC have frequently been used interchangeably in the literature (Petty & Guthrie, 2000; Bontis, 2001; Marr, Schiuma, & Neely, 2004), some researchers viewed the term IC as a comprehensive and unlimited strategic resource that embraces all intangibles including knowledge (Lev, 2001; Sveiby, 2010).

The current research adopts this all-inclusive perspective to IC as a wider unlimited organizational resource that encompasses all expressions of organizational knowledge.

Sánchez and Elena (2006), Martínez-Torres (2006), Martínez-Torres (2014), and Loyarte et al. (2018) highlighted the essential role of IC in knowledge-

based organizations, where intangible assets are more important than traditional physical materiality for value creation within an organization. Universities and research institutes work as knowledge creators and disseminators, and their outcomes are measured in terms of research and publications and incorporate both explicit and tacit knowledge. Secundo et al. (2010) suggest that creating intangible assets is at the core of the mission of education and research organizations.

The identification and measurement of IC are thus a priority to evaluate the alignment between strategic orientation and performance within such organizations .

Though no unified definition has been given to IC in academic studies, most of the researchers in the field, agreed that IC concept encompasses three components or resources: organizational capital (internal or structural) (OC), human capital (HC), and relational capital (customer or external) (RC). Research has also confirmed these components as non-physical, dynamic, interdependent, and integrative in nature (Roos et al., 1997; Bontis 1998; Kong & Prior, 2008). Nonaka and Takeuchi (1995) simply interpret the content of each component and the way the three components are interrelated and integrated as follows :

…knowledge is created only by individuals. However, the organization supports creative individuals or provides contexts for them to create knowledge. Organizational knowledge creation, therefore, should be understood as a process that 'organizationally' amplifies the knowledge created by individuals and crystallizes it as a part of the knowledge network of the organization. This process takes place within an expanding 'community of interaction' which crosses intra- and inter-organizational levels and boundaries. (p.59)

Manzari et al. (2012) suggested that categorizing IC concept into these three

components, would help organizations to make proper decisions about the actions that the organization should take and the programs to be implemented to build, promote, and maintain those valuable intangible assets.2. Literature Review.

2.1.1.Organizational Capital (OC)

Holton and Yamkovenko (2008) suggest that OC is the repository of knowledge that is accessible through various sources, and allows for knowledge sharing and knowledge creation among organizational members. According to Guthrie, Petty and Ricceri (2006), and Manzari et al. (2012), OC encompasses organizational values, organizational structure, organizational strategy, vision and mission, information systems, intellectual property, operational processes, working systems and routines, as well as an accounting of administration's decisions, actions, and expenses.

Marr, Schiuma, and Neely (2004) suggest that culture is a central organizational asset and encompasses factors such as organizational values, networking behavior of employees, and management philosophies.

They stress the fundamental and positive impact of culture on promoting organizational effectiveness since it develops a common mindset with shared values and beliefs that unifies employees, governs the way they behave, interact, and interpret events, and facilitates and directs individual and team effort towards achieving organizational goals.

Manzari et al. (2012) suggest that OC is an essential prerequisite for boosting HC and RC. An organization that has strong organizational capital will create favorable conditions for HC to realize its fullest potential which would promote innovation throughout the organization and consequently lead to enhancing relational capital RC.

1.1.1. Human Capital (HC)

For Bontis (1998), and Marr, Schiuma, and Neely (2004), HC comprises a wide range of individual and collective human assets such as employees' skills, competencies, experiences, education, tacit knowledge, attitude, creativity and problem-solving capability, initiation, commitment, motivation, loyalty, leadership, entrepreneurial and managerial skills.

Pasban and Nojedeh (2016) argue that HC is a key driver in improving all other organizational assets.

Therefore, effective strategic human resource management systems should be implemented to help employees to develop higher skills and acquire knowledge and information needed to spark innovation and creativity.

Bontis and Fitz-enz (2002) asserts the crucial role of employees' training programs in increasing the knowledge base of organizations, enriching human capital, and improving organizational performance.

Montequín et al. (2006) suggests that supporting employees' development leads to higher satisfaction and lower turnover.

Burud and Tumolo (2004) refer to the investment of HC as the main characteristic of learning organizations.

1.1.2. Relational Capital (RC)

RC depicts the quality of relationships an organization has with its stakeholder groups, the exchange of knowledge between them, stakeholders' perceptions of the organization, the organization's influence over stakeholders, and the organizations' reputation and image (Hunt, 1997; Montequín et al., 2006; Kong & Prior, 2008; Gogan, Duran, & Draghici, 2014).

Dyer and Nobeoka (2000) propose that networking relationships between the organization and its external stakeholders stimulate the creation, acquisition, and exploitation of knowledge while Kale, Singh and Perlmutter (2000)

suggest that networked relationships increase stakeholders' trust in the performance of the organization. Montequin et al. (2006) argue that RC requires that organizations develop comprehensive knowledge about stakeholders' needs, marketing strategies, customer relationship management, as well as knowledge of the society where it operates.

Kong (2008) argues that external knowledge input from stakeholders provides managers and employees with a better understanding of strategic direction, and consequently leads to better strategic decision-making enabling employees to direct their energy towards the same goals.

1.2. IC measurement and reporting in research centers

In knowledge-based economies increasing attention is paid to IC measurement and reporting processes (Marr, Schiuma, and Neely, 2004). Many scholars stress the need for investigating IC management practices inside organizations (Dumay, 2009; Guthrie, Ricceri, & Dumay, 2012). Bounfour (2015) pointed out the importance of developing evaluation and monitoring tools for measuring and reporting IC in public organizations since they have been facing more pressure to increase their transparency and openness to public and societal scrutiny as an essential part of good governance. He argues that adopting a working definition for IC assets in an organization is a natural precondition for measuring.

Marr, Schiuma, and Neely (2004), Sharabati, Nour, and Adel (2013), and Loyarte et al., (2018) suggest that organizations adopt an IC measuring and reporting system for internal and external purposes.

As for internal purposes, IC measuring and reporting would help organizations to develop effective strategy, allocate organizational resources, assess strategy implementation, and make informed decisions about actions and programs necessary for enhancing organizational performance. Measuring

and reporting on IC management practices can also serve as external validation by ensuring transparency and consequently enabling accountability. Through annual published reports, organizations disclose comprehensive, relevant, and accurate information to external stakeholders.

Bounfour (2015) suggests that developing operational IC indicators for measuring organizational performance is also significant in building reputational stature.

In the educational context, Bornemann and Wiedenhofer (2014), believe that systematically monitoring intangible assets in public as well as privately managed educational institutions contributes to better accomplishment of strategic objectives. Considering the importance of IC assets for universities and research centers, managing and reporting on IC seem to be essential for improving research management, presenting the achievements of research and innovation to stakeholders, enhancing governance, and providing a basis for benchmarking analysis; thus making universities and research institutes more comparable, flexible, transparent and competitive (Leitner & Warden, 2004; Sánchez & Elena, 2006; Pérez & Warden, 2011; Martínez-Torres, 2014; Ramírez-Córcoles, Tejada, & Manzaneque, 2016).

Ahmed, Nokhal & Abdulmajid (2018) view IC disclosure as a leverage of a spirit of competition between universities, and a developmental tool that help improve performance. Poor application of such IC indicators for measuring universities' performance could lead a decline in world university rankings. Cañibano and Sanchez (2008) argue that in response to the greater autonomy they are given, universities and research centers should report on their intangible resources and activities to society as accountability goes side by side with autonomy.

Furthermore, Todericiu & Şerban (2015), Sharabati, Nour, and Adel (2013) stressed the significant importance of applying IC indicators in leveraging

universities' and research centers' performance. According to Todericiu & Şerban (2015), assessing IC help universities and research centers develop their strategy; monitor and evaluate its execution; support decision making process; promote effective relationships with external shareholders, measure their contribution to knowledge creation and dissemination, and compare (benchmark) their performance with counterparts locally and globally.

It can also bring about managerial, cultural, and organizational changes. For Secundo et al. (2010) IC measurement and reporting, could get researchers out of their ivory tower closer to real requirements of the public and industry since it promote a more transparent assessment of performance.

Pioneer initiatives were developed in Europe for measuring, reporting, and managing IC in universities and research centers. The aim was to raise awareness and disseminate best practices for IC management and disclosure among universities and research centers and to encourage them to manage and report on their intangibles (Leitner & Warden, 2004).

The earliest endeavor was that of the Austrian Research Centers (ARC), the biggest public-sector funded research organization in Austria. In 1999, (ARC), was the first European research organization to develop, apply, and publish an IC report based on the common classification of IC into organizational, human, and relational components with a set of indicators for each. The report was meant to enhance transparency by diffusing information to stakeholders as well as improve strategic management and foster the management of intangibles.

As a result of the powerful impact of this model, Federal Ministry of Education, Science and Culture of Austria in 2002 made IC reporting mandatory for all Austrian universities (Cañibano &Sanchez, 2008).

Several other initiatives for reporting on IC rolled out with the aim of improving the quality and competitiveness of European universities and

research institutes. Among these initiatives are: "A Guideline for Intellectual Capital Statements", created in 2000 by a task-force funded by the Danish government, the "Guidelines for the Management and Disclosure of Information on Intangibles", developed in 2001 by MERITUM, a EU-funded research network, "Intellectual Capital Program" carried out during the period 2000-2003 by a research group from Institute of Business Administration affiliated to the Autonomous University of Madrid (Spain), and a comprehensive framework for managing and reporting on IC developed in 2004 by the Observatory of European universities (OEU) and funded by the European Commission (Cañibano & Sanchez, 2008; Sánchez, Elena, & Castrillo 2009; Secundo et al., 2010).

Additionally, emergence of quality assurance movement as a relevant issue in university discourse raises the awareness of universities and research centers with respect to managing and publishing information about intangibles. Universities and research centers have been forced to be more transparent and to disseminate more information to stakeholders as a response to an increase in external demands for greater information on the use of public funds. (Cañibano & Sanchez, 2008).

Despite all the previous endeavors, limited instruments to measure and manage IC are applied in knowledge-intense organizations.

Ramírez-Córcoles, Tejada and Manzaneque (2016) reported that only a few Spanish universities have taken the challenge to measure, manage, and report on intangible assets; thus confirmed the need for Spanish universities to offer information on IC in their annual reporting. Similarly, Bezhani (2010) examined the amount and the nature of voluntary IC disclosure of UK universities, the relation between performance and amount of IC disclosed, and the opinion of UK universities on a mandatory disclosure of IC.

Findings suggest that the amount of IC information disclosed by UK

universities in their annual reports is low. UK universities were identified as being over-regulated and having low awareness of IC.

Therefore, voluntary IC disclosure was suggested as the best option as the introduction of mandatory disclosure of IC reports increase the burden for the management of the universities.

According to Elena and Leitner (2013), the Austrian case is a remarkable example since it has made the delivery of an IC report by its publicly funded universities compulsory since 2006.

Manzari's et al. (2012) review of IC literature indicates advances in the measurement of IC components, while asserting components cannot be generalized. Sánchez and Elena (2006), believe that intellectual assets are specific to each organization and their value and relevance depend on their potential contribution to the institution's key objectives.

For this reason, a necessary starting point would be the identification and dissemination of the organization's strategic goals.

Loyarte et al. (2018) agrees that IC as a system of intangibles has strategic relevance as it allows mangers to apply assets in a way that suits their organizations' strategic goal and fits its specific context.

Similarly, Chiucchi (2013) suggests that the successful implementation of IC requires its association with specific strategic objectives or change initiatives otherwise it will not be given a priority by managers and their commitment to developing IC management practices will decrease.

Dumay (2009), and Loyarte et al. (2018) claim that since there is no one custom-fit method for measuring IC in all organizations, each organization should develop its own IC measurement indices.

Bounfour (2015) and Chiucchi (2013) propose that measuring intangible assets and analyzing their effect on organizational performance is a thorny issue.

Adoption of IC measurement and reporting systems faces obstacles with data collection and processing. The non-physical nature of IC and its evaluation indicators entails subjective assessments as well as ambiguous interpretation. Sharabati, Nour, and Adel (2013) add that the interrelated nature of IC components and the difficulty to separate them becomes another challenge in measuring and valuing IC in organizations. Bounfour, (2015) argues that though most managers have been familiar with the topic of measuring and reporting on IC intangible assets as a well-established topic in the field of organizational management, they do not know exactly how to tackle it or how to develop tools of evaluation and measurement.

Based on reviewing the existing IC literature, the following figure (Figure 1) shows the IC management components and sub-components as evidenced in the literature and adopted here as a working construct for interrogating the organizational activity of NCERD.
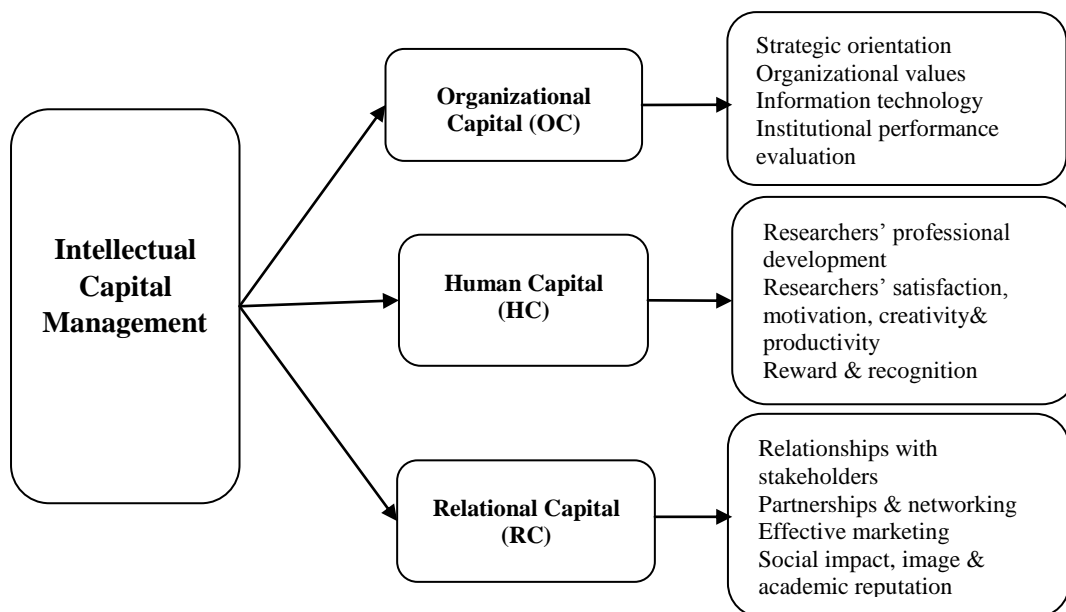
Figure 1. IC components as applied to knowledge organizations

3. NCERD Institutional Profile

The National Center for Educational Research and Development (NCERD) was established in 1972 through a Presidential legislation that sets it apart as an independent scientific institution with a legal personality that works under the supervision of the Minister of Education. The NCERD's goal is to provide policy makers and those involved in educational planning with scientific educational information that can help promote the comprehensive development of students and prepare them to develop society more generally. The NCERD' vision was stated for the first time in 2017: "To provide distinguished research projects for a modernized educational system that supports comprehensive development of the Egyptian society".

Its mission is defined as conducting educational research projects that inform decision-making, developing the educational system, and providing solutions to educational problems. (NCERD's Guide, 2017).

In terms of organizational structure, the NCERD reports to the Minister of Education who represents the head of the Board of Directors.

The Board consists of the NCERD's Executive Director, Divisions' Heads, and representatives of some agencies and institutions concerned with education. The Board proposes the Center's general policy and makes decisions to achieve its goals. The establishment of the Board reflects an interest in good governance and enhances a culture of disclosure, transparency, and accountability for achieving goals.

The NCERD's Director is appointed by a decree issued by the President of the Republic on the proposal of the Minister of Education from the working researchers who have been granted full professorship status. The Minister of Education has the right to delegate a professor from outside the Center to be appointed as the Center's Director.

The Director is appointed for a four-year renewable term. The Director

manages the scientific, administrative, and financial affairs of the Center according to the policies set by the Board. Heads of Divisions are appointed by a decree issued by the Board's Chair after consulting the NCERD's Director.

The NCERD has six research divisions. There are, on average, five departments in each research division. This reflects the diversified nature of research projects conducted in the Center.

These research divisions are Education Policy Research Division, Curriculum Development Research Division, Educational Planning Research Division, Educational Information Research Division, Technical Education Research Division, and Educational Activities and Care for the Gifted Research Division.

The Center is composed of one hundred and thirty-five researchers, and one hundred and ten administrative staff. Researchers' categorizations are as follows: Professor Emeritus (46), working Professor (8), Assistant Professor (22) (those who hold a PhD with published scholarship and have been working as Researchers for five years), Researchers (40) (those who hold a PhD degree), Assistant Researchers (10) (those who hold a master's degree), Teaching Assistants (9) (those who hold a bachelor's degree).

The NCERD annually carries out theoretical as well as field research projects covering a wide range of educational issues and topics based on the specializations of the research divisions and the respective departments within each division.

Research projects are to contribute to the achievement of the State's developmental goals, government reform programs, and the Ministry of Education's priorities and initiatives for improving the national educational system.

Research projects are published inside the NCERD. Some published research

is sent to the Ministry of Education, and some is retained within the NCERD's library.

The NCERD has a specialized refereed peer-reviewed scientific journal, Journal of Educational Research, issued on a semi-annual basis since 2002. Since 2000, the NCERD has held an annual conference.

As for financial resources, NCED is fully dependent on government funding. The NCERD's Board is permitted to accept donations and gifts from public and private agencies and individuals within the limits of pending regulations. No available documents have been found to show the NCERD's annual budget. However, the National Strategy for Science, Technology, and Innovation 2030 mentions that the total expenditure on research and development in general in Egypt is 0.7% of the national income in 2017 which counts for EGP 23.6 billion. Expenditure includes all governmental, private, and non-profit research institutions.

4. Methods

This investigation is an explanatory case study that provides in-depth descriptions and interpretations of how effectively IC is managed in the NCERD. Qualitative Case study is an intensive and holistic description and analysis of a single case bounded by place and time.

This single case could be an individual, a group of individuals, a program, an institution, a policy, or a system (Merriam, 1998; Simons, 2009; Hancock, Algozzine, & Lim, 2021).

It could also be or a problem, process, phenomenon, or event within a particular institution (Starman, 2013).

Stake (1995) emphasizes the particularistic nature of qualitative case study as well as its holistic one reflected in the interrelationship a case under investigation has with its specific context.

He defines case study as a "study of the particularity and complexity of a single case, coming to understand its activity within important circumstances" (p. xi).

Yin (2018) emphasizes the natural, ongoing context of the case being studied. For him, a case study is "an empirical inquiry that investigates a contemporary phenomenon within its real-life context" (p. 13) by addressing the "how" or "why" questions concerning the phenomenon of interest.

To fully explore the case under scrutiny in its complexity and entirety, qualitative case study research uses triangulation of data drawn from multiple sources of evidence. Three main data collection techniques utilized in qualitative case studies are: participant observation, interview, and document analysis (Stake, 1995; Merriam, 1998; Patton, 1999; Yin, 2018; Schwandt & Gates, 2018; Hancock, Algozzine, & Lim, 2021).

Employing quotes from key participants, narratives composed from original interviews, analysis of documents helps build up mental images that bring to life the many variables inherent in the phenomenon. Information collection may take a few months, or as long as is necessary to adequately define the case (Hancock, Algozzine, & Lim, 2021).

Merriam (1998) and Yin (2018) highlight the importance of properly conducting a literature review in a case study.

Constructing a rigorous theoretical framework regarding the case under study helps guide the inquiry and inform the process of data collection. Stake (1995) agrees with Parlett and Hamilton (1972) that the course of the case study cannot be set in advance, and that flexibility in case study design allows researchers to make major changes even after they proceed from design to research.

Two main approaches to qualitative data gathering and analysis are used in a case study as a typical qualitative research type: "inductive approach", and

"deductive approach".

The two approaches reflect different ways of shifting between data and theories or concepts. Inductive approaches tend to let the data lead to the emergence of concepts; deductive approaches tend to let the concepts or categories that had explicitly identified beforehand lead to the definition of the relevant data that need to be collected, and later analyzed (Yin, 2016).

Simply put deductive or a priori analysis is a kind of "top-down" approach to data analysis where predetermined codes, categories or themes drawn from a theoretical framework or literature review are applied to the collected data.

As such, the researcher adopts a particular theoretical position in relation to the collected data which are then sorted out according to predefined categories. Inductive analysis, on the other hand, is a more emergent strategy, where the researcher reads through the data and allows codes to emerge.

It is a "bottom-up" analytic strategy where the researcher goes with the flow of the emerging data. Inductive coding is appropriate when researching an issue or a phenomenon that is not yet well understood and the coding derived from the data helps the researcher explore the subject.

Therefore, this approach to coding is usually adopted when researchers want to investigate new ideas or concepts or when they want to create new theories.

A researcher can also take a hybrid approach where the analysis begins with a set of a priori codes, i.e., a deductive approach and then add new codes, in other words, an inductive approach while working the way through the data (Bingham & Witkowsky, 2022; Burnard, 2004).

Most qualitative research follows an inductive approach to data analysis. However, a deductive approach can help a researcher avoid a lot of uncertainty in doing initial fieldwork because he/she would have started with relevant concepts rather than waiting for them to emerge. It can also help a

researcher undertake the analysis with a very tightly focused lens and quickly identify relevant data therefore, avoiding distractions and detours. Nevertheless, a major risk could be the loss of any fresh insights into the real-world conditions under investigation (Yin, 2016).

The final report of a case study is generally narrative in nature, consisting of a series of illustrative descriptions of key aspects of the case.

Case study reports allow access to findings that others can recognize and use as a basis for informed action. In case study approach, researchers make recommendations to address the case they have described, analyzed, assessed, and appraised, and thus can inform the judgements and decisions of practitioners or policy makers (Hancock, Algozzine, & Lim, 2021; Bassey, 2002). Simons (2009) argues that when used as an evaluative approach, "case study has the potential for institutional development" (P.18) since it explains success or failure. He elaborates that every institution has a story to tell about its origin, its development, its achievements at a particular time.

Case study documents and interprets the complexity of that experience in its specific socio-political, and cultural setting. Though case studies sometimes are criticized for lack of generalizability as it aims to understand the case itself rather than generalize to a whole population (Merriam, 2001), it is suggested that "insights gleaned from a case study can directly influence policy, procedures, and future research" (Yin, 2018, P.10).

I am an embedded participant observer who has been working at the NCERD for approximately 22 years.

 I have gained a great deal of experience on how the organization works and the way research members' act and feel. As such, qualitative case study works as an ideal method for conducting research since the method asserts the crucial and decisive role of participant observation as one of the main sources for data collection.

Formal documents about NCERD were collected, reviewed, and coded to combine multiple data sources to corroborate or support an understanding of organizational processes that account for IC management within the NCERD.

In addition to observation and document analysis, semi-structured participant interviewing was carried out that focused on work and personal experiences through a relaxed informal approach promoting free association, storytelling, and open areas of interest (Sands 2012).

An interview guide was prepared and used to carry out interviews with a list of open-ended questions that covered three research themes. The aim of the interviews was to understand the current practices for managing the IC components in the NCERD from the viewpoint of the participants (who are researchers in the Center).

In developing the interview questions, I relied on certain key indicators for measuring and valuing IC management practices in universities and research institutes (See Figure 1).

These indicators were identified through reviewing the works of many scholars in the field of IC measurement and reporting in research institutes and universities and were chosen because they are closely associated with the NCERD's vision, mission, and goals.

Approval from institutional review board for conducting the interviews is gained. Interviews were conducted with thirty researchers with different academic titles.

This number accounts for 22.2% of the total number of researchers working in the NCERD (135 researcher at the time of conducting the research). Before conducting interviews, I took the interviewee' consent and assured confidentiality of responses.

Some of the interviews with respondents were conducted face-to-face while others in-part were conducted over the phone due to the spread of COVID-19.

Interviews were conducted between April 2021 and July 2021.

The qualitative data gathered were systematically analyzed using a deductive coding approach which is suitable for the evaluative and explanatory nature of the research. The concept of IC management has been well developed and has attracted widespread interest in the field of education with extensive citations in many public and educational administration journals. And thus, the study was organized entirely around its theoretical concepts.

As such, a set of predetermined codes (priori/initial codes, henceforth termed themes) emerging from the literature review of the IC management theory was used as a basis for data analysis.

These themes or categories represent the main indicators for the IC components as applied to research institutions and agreed upon by most of the previous studies.

As a starting point, empirical data collected from interviews were transcribed and read thoroughly to gain a general understanding of its content. Based upon the iterative reading of the transcribed text, along with other data gathered from the other sources, data were sorted into those predetermined theory-based categories and presented accordingly.

5. Findings

Before presenting and discussing research findings, it is worth noting that findings reached under each IC component will be presented in an integrative, comprehensive way that combines the data collected from all three sources. The study findings reflect the highly intertwined, connected, and overlapping nature of the three IC components. Thus, divisions within this section are for organizational purposes.

5.1. Organizational Capital (OC)

As for strategic orientation, official document review and analysis shows that

NCERD does not have a strategic plan and has not had one since its establishment. Only a goal for the NCERD was stated in its establishment decree with no mission or vision statement developed until 2017.

The NCERD's vision and mission are not well-advertised in the NCERD and not a single use of environmental print was found at any place in the NCERD that showcases them.

Additionally, through reviewing the official documents, I found that no updates have been made to NCERD's goal, vision, and mission since developed.

Almost all the participant researchers believe that an absence of a strategic orientation negatively affects the NCERD's ability to achieve its goals, address stakeholders' needs or have a considerable impact on society.

In this regard, one of the researchers commented, "we lack this sense of greater and common purpose that could unify and integrate our efforts and keep us oriented and motivated." It is also worth noting that, though the NCERD has a research division concerned mainly with educational planning with highly experienced professors in the field of strategic planning, as well as a Planning and Follow up Secretariat responsible for strategic planning, no strategic analysis techniques such as SWOT analysis has ever been performed to accurately diagnose NCERD's actual situation and thus help formulate a strategy to build and sustain the Center's competitive advantage by matching strengths and weaknesses with the external environment's opportunities and threats.

Regarding Institutional Values, and in respect to independence and academic freedom, most of the participant researchers have emphasized that the NCERD's independence constitutes a problematic issue. They stated that the NCERD does not enjoy a high degree of independence and academic freedom since it works under the supervision of government official, the Minister of

Education.

They stressed that that low level of independence and academic freedom negatively affect the quality of research conducted since it affects researchers' objectivity and impartiality. In this context, one of the researchers commented that,

the Center's affiliation to the Minister of Education is intended by the legislature to stress the significant role of the Center as the brain and policy kitchen of the Ministry of Education. This is no harm if it does not affect researchers' academic freedom in objectively analyzing and criticizing the Ministry's policies and decisions and suggesting new ones, but it does.

Though a small number of participant researchers stated that they enjoy a high degree of academic freedom with respect to the choice of research topics, they stated that research projects that criticize the Ministry of Education's policies and decisions are not welcomed. Additionally, some of the participant researchers agreed that some research methods are not welcomed in approaching research topics. This is obvious since I found no qualitative research that has been carried out by the Center during the past 15 years. Most of the research projects are quantitative in nature.

Only one qualitative research study was conducted in 2005 by the NCERD's researchers but funded by the World Bank.

Furthermore, almost all participants asserted the complex, tiring, and long logistical procedures to obtain official approval required for applying field research. From my long working experience, I believe that of a lack of qualitative research may, in part, be due to other reasons.

First, a lack of researchers' familiarity with this kind of research, the paradigms that govern it, and the research skills required to do them. Second, a lack of research funds, and inability of researchers to seek grants since such research methods could be costly. For all the above-mentioned reasons, I

believe, my colleagues in the Center prefer to do theoretically based research that generate knowledge, using traditional methodologies.

As for teamwork and collaboration, many participants emphasized that though research work in the NCERD is meant to be based on teamwork, interdependence, and integration, conducting research projects is characterized by lack of team spirit, prevalence of individuality. Some of the participants attributed this to low levels of mutual trust among team members, and high competition that hinder collaboration, the healthy exchange of ideas. Other reasons were relevant to the researchers themselves. Among them are lack of teamwork skills, evading prescribed responsibilities, indifference, lack of motivation, tension and personal conflicts, and negative attitudes. This is illustrated by one of the participants comments: "it looks like we are working in teams but actually we aren't.

" I believe that poor communication is one of the reasons behind ineffective teamwork in the NCERD as it causes misunderstandings and increases team members' feeling of being disconnected to the team and its goals.

In some research projects, where I have been a member of the research team, only one meeting was held at the beginning of the research to assign each member's tasks with no more meetings held to monitor the progress in doing the research, or to integrate researchers' efforts.

Interdisciplinary approach in doing research is specifically critical to the success of educational research centers.

Education is a highly interdisciplinary field. To fully investigate educational phenomena, different insights from multiple academic disciplines should be integrated. NCERD's researchers have different academic specializations such as psychology, sociology, management, economics, curriculum, educational technology, statistics…etc.

Researchers' different insights, if incorporated, could enrich a rigorous conversation and insights on educational problems.

However, I have noticed that researchers working in different divisions, never collaborate in doing interdisciplinary research projects.

Sharp boundaries are not only found in the interworking of the NCERD's divisions, but also departments that lie under each department used to work as separate units.

This may be due to a lack of leadership reinforcement for interdisciplinary teams, and an absence of organizational climate conducive to cross-team collaboration, lateral and organizational learning, or knowledge sharing either among researchers, teams, or divisions.

On the other hand, some of the participants affirmed that they used to do research projects in collaboration with certain colleagues with who they share "high levels of mutual trust and understanding," and who "adopts almost the same academic values." One participant described his team as his "comfort zone".

He added, even in times of conflicts that might happen due to different opinions or disagreement "resolution of conflicts is always easy, fast, and constructive.

" Another researcher elaborated, "our team is always "open, cohesive, synergetic, interdependent, and effective in producing high quality and rigorous research."

With respect to academic ethics and integrity, all participants stated their strong adherence to scientific integrity values and research ethics in conducting research. However, almost one third of the participant

researchers declared that they face some problems that has to do with intellectual property rights. Official documents review showed that no code of ethics and professional conduct was ever developed and adopted as a guide to researchers in conducting research projects.

Also, there is no guidelines for teamwork that define the responsibilities and the intellectual property rights of both team heads and team members in doing research.

Such documents, if available, would ensure an open, transparent, fair, and objective working atmosphere.

Regarding information technology, the important role of information technology in capturing, storing, and sharing knowledge and information both internally and externally was emphasized by all participant researchers.

However, a large majority of the participants confirmed that poor technological infrastructure is a major problem that negatively affects the availability and free flow of information inside and outside the NCERD, the quality of research projects, and the ability of the NCERD to work as a learning organization with a strong organizational memory of tacit and explicit knowledge.

Almost all the participants agreed that this problem is embodied in a lack of technological devices, poor internet connection, and absence of databases on the Center's activities, achievements, research, and researchers. Participants also emphasized the absence of educational databases that provide researchers with the most updated and urgent information and statistics they need to conduct research projects.

One of the researchers said, "research means information…how we are

supposed to do research while most of the information needed is considered confidential.

" Participants attributed this problem to three reasons: the high cost of acquiring technology especially with the Center's limited financial resources, lack of highly qualified IT staff, and the separation between the Ministry of Education' s information center and its counterpart in the Center.

As for the NCERD's library, it has not gone digital.

Its resources are all in print which hinders provision and easy access to its resources for the NCERD's researchers or other external academics. Through years of experience, I observed that, due to lack of financial resources, only a limited number of books are acquired annually. However, since 2016, NCERD' researchers have joined the Egyptian Knowledge Bank (EKB), a huge digital library with a massive content that covers all research fields.

This content was offered through partnerships with a wide range of local and global publishers.

Thus, NCERD's researchers have unprecedented opportunity to freely access the content of huge databases with hundreds of scientific journals and books.

As for institutional evaluation and accountability, documents analysis shows the absence of annual transparent reports that are issued on how the Center operates or the impact its research projects have on developing the educational process or solving certain educational problems.

Most participants agreed about the absence of a self-and external-

institutional performance evaluation system for the NCERD.

Almost all of them stated the absence of defined criteria, standards, or indicators for measuring the quality of the research products, or assessing divisions, individual researchers, or research teams' performance.

Some participants indicated that evaluation takes the form of routine reports that are written yearly by individual researchers about their activities without any consequences.

A large majority of the participants agreed that lack of transparency and inadequate disclosure of information about the Center's overall performance decreases the quality of the research done, undermines accountability to stakeholders, lower their trust in the Center, and negatively affects the Center's image.

In addition, more than half of the participants asserted that lack of external validation for quality or empirical value of the Center's research projects undermines research quality and objectivity.

I believe a reason behind lack of institutional evaluation could be an absence of a quality assurance culture as well as a general framework of quality assurance procedures for research centers in Egypt.

Though a national accreditation agency, The National Authority for Quality Assurance and Accreditation of Education NAQAA, has been created to evaluate the quality of educational institutions and disseminate best educational practices among them (presidential decree No. 82, 2006), the appearance of quality as a relevant issue to research centers' discourse is absent as research centers are not legally obliged by government, or other authorities to adopt quality assurance or

reporting systems.

Many of higher education institutions in Egypt, on the other hand, have applied to this system, whereby results of the evaluation on all aspects of universities' institutional performance, activities and resources including the intangibles are diffused to guarantee a credible quality assurance environment.

5.2. Human Capital (HC)

As for learning and training, almost all participants believe that professional development depends mainly on individual researcher's self-development efforts.

They stated that to promote their research performance, they continually engage in professional development opportunities.

Many of the participants mentioned that they had joined online training workshops provided for free by research platforms especially during the lock down periods due to the COVID-19 pandemic.

Participants also agreed that participating in doing the NCERD's annual research plans for years, along with the research they conduct to advance in the academic career helped in building their capacities for doing high quality research and developing professionally.

Some participants mentioned that they attend conferences and workshops on their own expenses.

Despite a widespread feeling of a personal responsibility for professional development, almost all participants emphasized that, within the Center, professional development opportunities are confined to non-regular seminars held voluntarily by professors inside each division.

Seminars that involve all NCERD researchers are very rare which hinders knowledge sharing and lateral learning among researchers.

Participants also agreed that not inviting external experts to the Center undermines the NCERD openness to other research institutions and decreases researchers' exposure to best practices and expertise in the educational research field.

Many participant researchers emphasized the need to join ESL courses to advance their proficiency level in English.

They overstated that not being competent in English constitutes a major obstacle to pursue professional development opportunities as it hinders them from keeping up with the developments in their fields of specialization, applying to research funding and training opportunities offered by international granting agencies, publishing research papers in international journals, or attending international conferences.

Most participant researchers attributed this to insufficient public funding especially with tighter government funding source each year, and lack of self-financing approach.

More than half of the participants, most of which are seniors, stated that during the 1990s and early 2000s, the NCERD used to provide professional development opportunities through partnerships with some concerned bodies such as the American University in Cairo, Cairo University, and the Institute of National Planning.

Many participants strongly agreed that building partnerships that aim to develop researchers' skills may be relevant to the extent that the successive NCERD's leaders believe in the importance of investing in researchers' training.

I also observed the inefficient role of the Secretariat of Public Relations in publicizing scholarships and research fund opportunities offered by different national and international funding institutions to the Center's researchers.

As for creativity as a thinking capacity of a researcher, teams, and

organizations especially think tanks, almost all participants reported week levels of individual and organizational creativity within the Center.

They gave some reasons that demotivate them and hinder the production of creative research work or promotion of innovation in the Center as a whole.

Some of them attributed this to the absence of acknowledgement and rewards for distinguished performance or academic productivity as well as the unsupportive working conditions embodied in poor physical and technological infrastructure.

The organizational climate which is characterized by absence of mutual trust among researchers, prevalence of individuality over team spirit, skepticism and negative competition has also been mentioned by many participants as another reason that hinders the promotion of creativity and innovation in research work.

One participant elaborated "with such an unhealthy climate, transparent, open and free brainstorming of ideas diminish, and creativity suffers".

On the other side, almost all the participant emphasized that work stress is a main reason for low levels of creativity. Since the adoption of Performance-Based Budgeting programs in the academic year 2016/2017 to improve efficiency, effectiveness, and accountability in the performance of Egyptian public organizations, the number of research projects to be done annually in the NCERD has been doubled. Participants asserted that the limited time span within which a given research project is to be submitted increases their feeling of being crushed and overwhelmed to meet deadlines.

Consequently, a culture of mediocrity instead of excellence prevailed and prevented the production of high quality and creative research.

Lack of leadership succession in the Center is another reason mentioned by almost all participants for lower levels of creativity and innovation in the Center, especially when those in leadership positions are in favor of maintaining the status quo.

Such a "static" management philosophy, which "has prevailed for years" in the NCERD, as most of the participants asserted, has been a stubborn barrier to the promotion of creativity in the Center. In this regard, one of the participants commented that the NCERD has been in a state of "organizational inertia for years…there is a serious need to challenge the status quo and effectively evaluate the way it operates if the center is to develop and survive".

Another participant commented that "creativity starts with senior leaders, if they are creative, they would stimulate individual as well as team creativity."

Additionally, and in regard to satisfaction, motivation and loyalty, almost all the participant researchers expressed their dissatisfaction with the remuneration system and benefits which they perceive as unfair.

Weak salaries and incentives, and outdated salary scale are noted by almost all participants as a reason for low motivation to increase research productivity or seek promotion. Few researchers, with less familial financial burdens stated their satisfaction with the given salaries. In this context, many participants stated that they had to work for years in universities and research centers in Gulf countries to ensure a decent life for their families.

However, participants expressed a high sense of belonging to the Center.

Another reason for low levels of satisfaction and demotivation expressed by a

large group of the participants is an overwhelming feeling of being marginalized by policy makers and consequently, a growing sense of having no real impact on educational practices since all their efforts end up on the library's shelves and not being applied in schools.

They highlighted that not feeling the impact of their research projects in the field decreases their feeling of engagement and fulfilment. A researcher commented, "a main driver for any researcher is to know that his research has made a difference".

Finally, all participant researchers confirmed that no surveys have ever been conducted to measure their satisfaction with their heads, working environment, or support provided to them. Some researchers highlighted lack of communication with the management of the Center as a problem that hinder them from facing challenges they meet while doing research.

Some participant researchers expressed that they most of time feel tense and frustrated, and that they sometimes seeing no point of doing continuous research except for surviving in academia.

5.3. Relational Capital (RC)

Almost all the participant researchers asserted the separation between the NCERD and stakeholders, mainly the Ministry of Education that rarely depend on the Center's research in developing educational policies or reform initiatives. A large group of the participants believe that marginalizing the NCERD's role in policy making is because the NCERD's research is highly theoretical in nature.

With this, research recommendations always lack the practical steps that decision makers can employ to solve educational problems or initiate change.

On the other hand, almost half of the researchers attribute this separation to dominance of centralization in the management of the education sector in Egypt where input or feedback from concerned bodies and stakeholders is not

welcomed.

Other reasons that decrease the Center's impact in informing educational policy and practice in Egypt, as many participant researchers asserted, include that the Center does not develop policy briefs that benefit decision makers, nor publicly issue periodic reports on the state of education, or conduct experimental studies to promote educational innovations.

Several participants elaborated on the fact that insufficient funding and not having experimental schools affiliated to the Center, have always prevented it from conducting field research projects or longitudinal experimental ones at a national level.

As for the Center's relationships with professional practitioners as main customers, participant researchers agreed on a lack of clear and unified mechanism for marketing the Centers' research results to main stakeholders namely, educational administrators, school principals, and teachers.

As such, they are not informed of how these research results could develop their practices or solve problems they face in the field.

During my working years at the Center, I found that no electronic copies of the NCERD's research have been made available for them to read, no hard copies or even summaries of research results are sent to schools. This being so, the gap between the Center and practitioners increases especially with the absence of action research study designs and experimental research carried out within schools.

In addition, participants also indicated a lack of initiatives taken by the Center's with respect to building effective partnerships with local and international institutions in conducting research, promoting researchers' development, or seeking funding opportunities.

Furthermore, participants agreed that a lack of marketing strategies to publicize the NCERD's achievements have significantly affected its image in

Egyptian society. Participants added that the Center is also unknown not only to practitioners but also to parents and students.

Most of the participants asserted that not having a well-designed effective and interactive website or social media platforms for many years negatively affect the NCERD's ability to market its research and activities to stakeholders. This negatively affects the NCERD's image in society as a research institution with a good academic reputation.

Others added that absence of a unit for translation and international publishing also negatively affects marketing of NCERD's activities.

Furthermore, many participants stated that though having an annual conference would help in promoting the Center's efforts to stakeholders; its effect is not significant in increasing popularity among practitioners, academics, and other stakeholders for several reasons.

Participants substantially commented that though conferences, by nature, ought to provide a rich opportunity for sharing knowledge, best practice, and experiences among different researchers from different countries, the NCERD's conference enhances its isolation and closure since no papers from external researchers are accepted; only research that has been conducted by teams in the different research divisions of the Center are presented in its annual conference.

In summary, the foregoing findings of the evaluation of current IC management practices in the NCERD reveal that the three IC components are poorly managed which significantly undermines the Center's impact in developing the Egyptian education system, and therefore negatively affect its image among stakeholders.

6. Discussion

Since IC is key to the workings of research centers, the study aimed to investigate IC management practices within the NCERD and propose some

operational recommendations that could promote more effective IC management in the NCERD whereby improving its performance. Findings indicated poor management of IC in the NCERD; however, they reflected participant researchers' awareness of the importance of investing in the IC's organizational, human, and relational components to improve the NCERD's performance. The findings of the study align with the studies of (Korany & Ateeky, 2012) that reported poor IC management in Egyptian universities. Among the main reasons mentioned by many studies for ineffective IC management practices in universities are: a lack of belief and awareness among university leaders and academic departments' heads of the substantial role IC has on improving institutional performance, weak levels of administrative and financial autonomy as a result of centralization and high regulation, and adoption of traditional management approaches (Hasanein, 2021, Al Sayed, Sharaf, & Al Dahshan, 2021; Mahmoud, 2018; Dawood, 2017).

Research centers' performance is influenced by economic, political, and social factors that could be enablers or barriers to high quality performance. Though financial support is crucial for high quality research, the NCERD as a typical research center working in a developing country with challenging economic situation suffers from a lack of fund.

Findings of the current study reported that inadequacy of government funding allocated to the NCERD affects many aspects of its performance. According to the Ministry of Higher education and Scientific Research in Egypt (2019), poor funding, and lack of independent sources of funding is a main barrier that face scientific researchers in Egypt in general. It is also considered a source for brain drain in these institutions.

Similarly, many interviewed researchers indicated that they either worked for Gulf countries for better career opportunities and standard of living.

Elkerdawy (2014), reported that weak salaries and low standard of living have the most influence on brain drain in Egyptian public universities.

Apart from funding, however, researchers stated other challenges pertaining to the traditional organizational culture that seeks to preserve the status quo and favors centralization of authority and the stability of management systems over change and innovation.

Findings in this respect aligns with that of Ghoneim (2012) who reported an absence of organizational culture that encourages open discussions and critical review of NCERD's management policies and practices, and Kotait (2016) who reported lack of organizational culture supportive of creativity and innovation. Other challenges revealed include low levels of autonomy and academic freedom that, from the participant researchers' point of view, undermines the quality and objectivity of research. In this context, participant researchers highly emphasized inadequacy of information and statistics required for doing research, and the complex logistical procedures as a main barrier to conducting field studies.

To avoid such bureaucratic procedures, most of participants stated their tendency to do theoretical studies. This, in turn, limits the collaboration opportunities with practitioners and widen the gap between the NCERD's research and practice in the educational context in Egypt. Kasem and Nawwar (2020), and Kotait (2016) corroborated the research findings in this regard by reporting the difficulty NCERD's researchers face to access official documents whether from the ministry of education or other government institutions.

Findings of the current study also indicated an absence of a long-term strategic plan for the NCERD, and lack of annual reports on its performance which undermine transparency and therefore accountability.

These findings coincide with that of (Cañibano and Sánchez, 2008) which

revealed that little emphasis is placed on developing management systems and strategic orientations in European universities and research centers. This was attributed to the fact that public organizations are seldom compelled to produce annual reports on their performance.

However, with the increased competition with private universities and for-profit research organizations, public research centers will be obligated to report on their IC practices.

Moreover, Zaghloul (2018), Azzazi (2017), and Ghoneim, Nasr, and Kotait (2019) corroborate the research findings regarding the HC. They reported lack of professional development opportunities provided to NCERD's researchers and lack of incentive system to reward researchers with distinguished performance. As such, (Cricelli et al., 2018) asserted that that greater attention should be paid to developing critical mass in knowledge-based institutions to maintain the production of outstanding research and sustain innovation. The study also reports the importance of encouraging the international mobility of scholars for more enriching research experiences.

Findings also revealed an increased focus on the number of research projects produced annually by the NCERD as a result of implementing a mandatory research performance measurement system since 2016.

Participant researchers asserted the negative effect this have had on the quality of research conducted and how stressful they used to feel to meet strict deadlines. In this regard, Secundo, Lombardi, and Dumay (2018), reported an ever-increasing obsession of universities and research centers with global ranking as well as the implementation of research performance measurement system that depend on the number of output publications rather than quality. This leads to a loss of sight of the real outcome of these research institutions and negatively affect academic human capital.

Therefore, they suggested that pushing research organizations to increase

academic research without ensuring its quality or applied benefits may have the opposite result from the intended ones.

Though creating impact is closely related to an organizations ability to effectively build and manage trusting relationships with stakeholders and other actors in its external environment (Kong, 2008), the findings of the study revealed the weak role of the Center in developing high quality relations with stakeholders and lack of clear and unified mechanism for marketing research results to them.

Previous studies revealed the weak capacity of the NCERD in this regard. Kotait (2016), and Kasem and Nawwar (2020) reported an absence of a marketing plan for the Cente's achievements, the ineffective role of the center in educational policy development, and a lack of societal recognition of the impact of the center's research on developing the educational process or addressing developmental challenges.

Findings of the study also show a gap between rhetoric and reality. Official documents emphasize the significant role of educational research centers in informing educational policies and decision making and the Ministry of Education's adherence to developing the working system and strategies in these research centers affiliated to it (Ministry of Education, 2014).

However, results revealed the weak role of the NCERD in informing policy and practice in Egypt. This could be, in part, due to the highly centralized administration of the educational system where educational policies and decisions are driven by political agenda that marginalizes the role of educational researchers, academics, and practitioners. As such, Evidence based policy making is not given its due importance. Additionally, socially, and culturally speaking, a scientific research culture is not well established among practitioners in Egyptian society with an appreciation of individual experience over research results and evidence-based practice.

This makes it more difficult for the NCERD to assume an active role in influencing and shaping the views of policy makers, practitioners and the public concerning educational issues.

It is also worth noting that, in general terms, findings indicated no substantial differences between the responses of participant researchers according to academic ranks or gender. This could be due to two reasons. The first reason has to do with the long intervals between appointments of new researchers within the Center. Only two patches of researchers were appointed since 2000. As a result, almost more than 85% of the researchers have been working for the center for more than 20 years (the latest patch that include younger researchers counts only for 14.8% of the total number of the researchers working within the Center).

Being exposed to the same working conditions and going through similar working experiences throughout long years have driven the researchers to have shared opinions concerning the current state of the IC practices in the Center regardless of their academic rank or gender.

The second reason pertains to the static state from which the center has suffered for a long period because of a lack of partnerships, lack of researchers' mobility, ineffective relationships with stakeholders, and poor marketing capacities. This state has led most of the researchers to hold similar views regarding the different aspects of the Center's performance and the management practices.

This state is widely expressed with a highly repeated sentence; "we've been frozen". Other sentences mentioned by participant researchers are: "the center is not moving at all", "the center has become stagnant", "we've become isolated", "the center is in a state of organizational inertia".

Other participant researchers elaborated that "unless an external force such as restructuring or organizational development initiatives are applied, nothing

will change". Statements like these further support the researchers' perception that the Center, as a knowledge-based organization, is losing agility and flexibility to adapt to stakeholders needs, achieve researchers' satisfaction, or identify and market a good image within the Egyptian society.

7. Conclusion and Recommendations

Since many studies have verified the significant role of IC management in improving organizational performance, and due to a lack of studies that investigate IC management in research centers, especially in developing countries, this article set out to achieve two goals: Firstly, to investigate the current IC management practices of the NCERD in Egypt, and secondly, to propose some operational recommendations on how to manage IC effectively to enable the NCERD to better inform educational policy and practice in Egyptian society as well as promote its image as a distinct research thinktank nationally and internationally.

Although the use of a single case study is not intended to produce knowledge for generalizability in any statistical sense, this case may provide transferable insights for other research centers in Egypt or similar research centers in developing countries.

Overall findings suggest that three IC components –OC, HC, and RC – are poorly managed. Poor IC management negatively hinder the NCERD from achieving its goals or influencing policy makers, practitioners and the public's views concerning important educational issues.

In the light of research finding, some recommendations can be suggested. Effective IC management begins with raising the NCERD's management awareness of the significant role of intangible assets and effective IC management in promoting the NCERD's role in developing the educational process is significant.

A coherent and well-defined strategy should be developed as a basis for

performance monitoring, and accountability.

Adopting a rigorous evaluation system and effectively disclose about research performance through annual reports is significant. Annual reports enhance transparency and knowledge sharing between the NCERD and stakeholders, enable good governance, and help to identify performance gaps in planning or implementation. Annual performance evaluation for individual researchers, Heads of Divisions, and NCERD's Director should also be conducted with key performance indicators to measure the quality of research conducted.

Investing more in the HC in the NCERD, creating a positive work atmosphere and increasing researchers' job satisfaction would promote motivation, creativity and productivity at the individual, team, and organizational levels. This could be achieved through rewarding and acknowledging excellent research performance for individuals and teams. Developing effective communication channels between researchers and management through regular meetings is crucial. It could make researchers feel that their problems and concerns are listened to and addressed. Besides, a higher degree of independence and academic freedom should be granted to the NCERD's researchers to inspire creativity and guarantee impartiality and objectivity in doing research. A code of research ethics should be developed and publicized inside the NCERD to guarantee researchers' adherence to academic integrity and intellectual property rights and legitimize the NCERD both internally and externally. To strengthen the democratic practices in the NCERD and, provide a working atmosphere that respects researchers' rights, a succession planning policy should be developed and implemented.

This will guarantee the institutionalization of rotation of power, and enable "new blood" with passion, and new insights to take the initiative to develop NCERD performance.

A well-designed professional development plan for researchers should be

developed with appropriate funding allocated to it.

To encourage researchers to apply for available funding opportunities provided by the Ministry of Higher Education and Scientific Research or other international funding agencies, the NCERD should have a grants resource unit.

Through this unit, researchers are trained on writing grant proposals to successfully apply for research funding opportunities as well as scholarships and training grants that support graduate and postdoctoral. They should also be trained on how to manage research funds when they come.

Furthermore, the NCERD should financially support researchers to participate in international conferences and publish research internationally.

Developing IT infrastructure could promote organizational learning and knowledge sharing among researchers and therefore enhances their research performance.

To increase social impact, and advance its reputation in society, the NCERD should maintain positive relationships with stakeholders. This could be achieved through developing effective communication channels with them, encouraging them to give their feedback on its services, and measure their satisfaction with the services the Center provides.

Building high quality relations with stakeholders requires investing in communication technology such as having an interactive website and other social media platforms.

Through such platforms, operational and practical implications of the results of the NCERD's research could be provided electronically, in an accessible language, to a broad audience of policy makers, practitioners, academics, parents, the media, and the public. In addition, much more effort should be

made to strengthen the Center's relationship with practitioners and bridge the research – practice gap.

Action research should be encouraged to suggest practical solutions to urgent practice problems. NCERD's researchers should inform and train teachers and school principals on how to implement best and evidence-based practices. The NCERD should also have experimental schools affiliated to it to implement educational innovations and assess their impact before scaling up.

On the other hand, networks and twinning programs with corresponding educational research centers locally, regionally, and internationally should be built.

Such partnerships foster the exchange of experiences and knowledge through collaboration with external researchers. They could also increase the quality of research conducted in the NCERD, enhance researchers' exposure to best practices, enrich their research capacities, and help them seek funding opportunities.

Additionally, The NCERD should keep pace with the current worldwide initiatives for benchmarking and ranking research institutions' performance such as InCites, SCimago Institutions Rankings, and Snowball, the NCERD by encouraging international publishing, and opening its research product to scientific scrutiny from external experts which, in turn, would promote researchers' skills and improve the quality of research conducted.

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