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**KNOWLEDGE-CENTRIC PRACTICES OF PERFORMING
ARTS ORGANIZATIONS:
NEW DIRECTIONS FOR ORGANIZATIONAL RESILIENCE**

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Abstract

This paper explores the concepts of knowledge-centric organizations in the performing arts sector as a means to understand how specific organizational practices relate to measures of financial and operational performance. Using the authors' prior framework of a knowledge-centric arts organization, a quantitative study of 368 small and mid-sized non-profit performing arts organizations in the United States was conducted via primary data on 36 organizational practices and secondary data on 21 performance metrics. A statistical analysis using structural equation models found several distinct performance metrics' dimensions that are statistically associated with knowledge-centric practices, in particular related to board contribution, the resilience of the organization and attendance. On the other hand, no relationship was confirmed with monetary performance measures. We were also able to show some important correlations between demographic characteristics of organizations and their usage of knowledge-centric practices. These findings can serve as a basis to further investigate how organizations can remain sustainable and operate effectively in a knowledge-driven society.

Keywords: Knowledge Centricity, Organizational Performance, Knowledge Management, Performing Arts, Structural Equation Models

JEL classification: D80, D83, G31, G32, C38, C43

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1. Introduction

In a fast-paced, knowledge-driven society, successful organizations must be able to generate and use knowledge to advance their goals and missions. The concept of a knowledge-centric organization has emerged as a term of art in many industries, and business leaders have begun using the term as a means to understand how institutional knowledge serves as a critical component of organizational effectiveness (Pemberton and Stonehouse, 2005). As many arts and cultural organizations in the United States face financial and operational challenges, it is important to understand what practices could lead to improving their condition.

At its most fundamental level, a knowledge-centric organization is one in which multiple people, departments, and programs can use collective knowledge to advance organizational goals. Knowledge-centric organizations can gather and leverage disparate sources of data and information and view knowledge as a core value. More importantly, knowledge-centric organizations gain a competitive edge over those that are not through the ability to innovate, operate more effectively, and respond more quickly to changes in their environment (Grant, 1996).

The role of data and information are important components of building knowledge within organizations. In the study of organizational dynamics, data and information are considered distinct but linked elements towards knowledge. The usage of information and communications technology is directly linked to knowledge-centricity as it is the key method through which organizations gather data, create information, and build knowledge.

The influence of organizational practices on performance and, specifically, on an organization's ability to move towards knowledge-centricity has captured the interest of scholars in multiple fields. Management theory has looked at corporate effects and organizational performance through multiple angles including leadership styles (Bass, 1985), characteristics of top management teams (Finkelstein and Hambrick, 1990), corporate strategy (Bowman and Helfat, 2001) as well as factors in the external environment (Meindl and Ehrlich, 1987). Researched topics also include the knowledge economy and the interaction of technology and well-educated minds to create wealth (Kamberg, 2007); the role of knowledge management in improving competitive advantage and organizational success; and "knowledge," as the collective intelligence of people within a business enterprise, serving as its largest intangible asset and having a positive influence on performance (Sullivan, 1999).

Moving from the overall area of organizational practices and related effects and looking specifically at knowledge-centric practices and their relationship to organizational performance in the nonprofit arts sector reveals that the extant literature is focused on strategic orientations of organizations and other broad approaches. There is very little study of specific, knowledge-centric organizational practices and their links to some aspect of performance in arts organizations. Cullom and Cullom (2011) investigated the importance of knowledge-based strategies for nonprofit organizations to ensure sustainability, while Abfalter, Stadler, and Müller (2012) investigated knowledge sharing in a seasonal arts festival, highlighting the challenge of sharing knowledge in a structure with "short-term collaboration and the dominance of one or a few individuals."

Studies like these have helped open up the discourse on how knowledge-centric practices could impact the field. However, there is a lack of literature in this area, especially research that focuses specifically on organizational metrics and performance. In particular, there is very little research specifically on financial and operational performance, which is vital in

gaining insights into building organizational resilience. As the arts and cultural field strives to build sustainability and relevance, there is a significant need to investigate how knowledge-centric practices could impact this process. In this light, the role of organizational performance metrics and knowledge-centric practices comes into greater prominence.

This study investigates knowledge-centric practices and organizational metrics with a goal of gaining deeper insights into possible linkages of practices to financial and operational performance. With this framework in place, a hypothesis was developed to determine if an association exists between organizational practices that align with knowledge-centricity, as defined by the authors and organizational performance. The goal is to benchmark data on knowledge-centric organizational practices with organizational performance metrics to analyze possible linkages between the two. It is hypothesized that organizations that exhibit higher levels of knowledge-centric practices will be positively associated with higher levels of organizational performance. Further, it is hypothesized that some practices may be more strongly associated with organizational performance.

The present study is structured as follows. In the next section we present a literature review covering the main topics related to the concept of knowledge centrality, then we describe our data and the methodology employed to test our hypotheses. In the fourth section, we present our results and, in the fifth, conclude with a discussion of the findings and research and policy implications.

2. Literature review on Knowledge centrality

Machlup's pioneering work, *The Production and Distribution of Knowledge in the United States* (1962) marked the beginning of the study of the so-called "postindustrial information society." Other researchers joined Machlup's prospect, commenting on the emergence of a 'knowledge industry,' 'knowledge society' or 'post-industrial society.' In this vein, Drucker (1968) argued that "knowledge has become the central economic resource" and that this required a completely new set of policies and management strategies aimed at promoting the application of knowledge and skills as the main source of productivity (Drucker, 1968: 40-41). From that point onwards, this concept incepted in the discipline of economics and, through its development, spread to the field of information science.

The core attribute of the so-called 'postindustrial society' was its use of intangible intellectual capital and knowledge resources (Gordon, 1971; Bell, 1973; 2005; Touraine, 1973; Porat, 1977; Masuda, 1981; Gorz, 1992; Castells, 1996; Kallinikos, 1996; Harvey, 1989; Cohen 2006; 2009; Nyiri, 2008)². Innovation and knowledge were already relevant in the industrial society. However, the distinctive characteristic of post-industrialism was the emerging role of "theoretical knowledge" as the processes of innovation had become much more systematic and more organized, linking science and technology closer together (Bell, 1973). Like Bell (1973, 2005) and Touraine (1973), Castells identified the dynamics of the emerging society in the role and use of knowledge and not in the predominance of any one particular sector of an economy. This context represented the conceptual framework of the knowledge capitalism – the economic regime – proposed by Burton-Jones (1999; 2001). According to this scholar, the shift to a knowledge-based economy mandatorily implied redefining firms regarding organization as well as resources and reshaping the links between learning and work. Several

² While these post-industrial thinkers do not share the same view and approach on the concept of post-industrial society, they differ largely on the strength of their emphasis, for brevity's sake we analyze their varying positions with an objective to contextualize the concept of knowledge as intangible asset singled on a number of economic and social fronts.

authors (Styhre, 2002; Little, Quintas and Ray, 2002; Liebeskind, 1996; Leonard-Barton, 1995; Blackler, 1995; Pfeffer, 1994) regarded the emergence of intangible intellectual and knowledge-based resources as the key organizational resource that had an impact both on the economic system as well as the organizational level. Referring to the majority of knowledge management literature Styhre (2002) observed that: “knowledge is simply considered to be a substitute for other tangible organizational resources without a proper analysis being conducted of how such intangible resources are employed in the firm” (Styhre, 2002: 229). Knowledge has a clear intangible dimension, and can generate a flow within a process of producing, sharing, exchanging and consuming (Styhre, 2002; Tsoukas, 1996; Starbuck, 1992; Latour, 1987).

The capability to manage and exploit knowledge was the essential success requirement within this emerging knowledge economy. Adopting Burton-Jones’ approach (1999), Teece defined the essence of the firm as its ability to create, assemble, transfer, integrate, then exploit knowledge assets that underpin its capabilities (Teece, 1998; 2000; 2005). Therefore, a company’s capabilities are seen as a combination of all knowledge assets and cognitive processes that allow an organization to carry on its business processes (Miller, 2003; Montealegre, 2002; Pehrsson, 2000). This concept leads to the techno-human nature of organizations, whose goal is to develop adaptability, resilience and the capacity to deal with new emerging business challenges (Schiuma, 2011). Knowledge may be supported by advanced technological systems, but the human dimension remains as the main challenging issue as it is this specific dimension upon which is based the creation, management and development of knowledge. As early as 1964 Drucker stated “What does make a business distinct and what is its peculiar resource is its ability to use knowledge to social, economic and managerial advantage” (Drucker, 1964: 17).

Mcgee and Prusak (1993) noted that core competencies are not what an organization owns, but rather what it knows. The sharing and the dynamics of knowledge become central in qualifying the organization and the quality of its outputs. In his pioneering contribution, Nonaka (1991, 2007) introduced the concept of ‘knowledge creating company’. In this context creating new knowledge is not simply a matter of “processing” objective information. Rather, it relies on extensively use the tacit and often highly subjective insights, intuitions of individual employees and making those insights available for testing and use by the organization as a whole to improve its performance. This new knowledge is considered as the feedstock of competitive advantage (Kazuo and Nonaka, 2007).

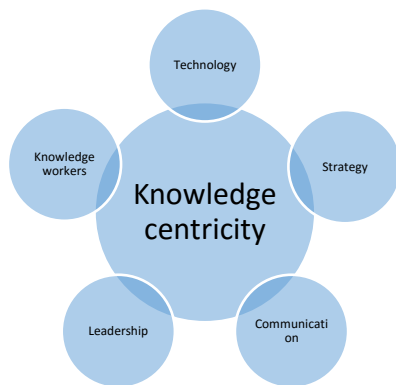
In this shifting paradigm of knowledge, we can refer to the conceptual framework of the knowledge journey introduced by KPMG in 1997. In this report, the various stages of an organization becoming knowledge focused are presented. This journey is assumed to be an evolutionary process depending on several factors. The five-stage journey (knowledge chaotic, knowledge aware, knowledge enabled, knowledge managed and knowledge centric) outlined by KPMG was initially used from a technological standpoint and later used as a framework to analyze socio-technical, cultural and managerial issues (Pemberton and Stonehouse, 2005). The KPMG report looks at four key process areas to develop knowledge management, namely: people, process, content, and technology, with each area having a checklist of items (KPMG, 2000).

As mentioned previously, in the literature there is no clear agreement on the components that should be considered as part of the concept of knowledge centricity. Building upon the KPMG’s reports (1997; 2000) – in which four areas have been acknowledged as relevant

(people, process, content, and technology), Pemberton and Stonehouse (2003) identified seven areas that should be included in the knowledge centrality organisational characteristics matrix: strategy, structure, leadership, infrastructure, culture, measurement, and individuals. Each area is characterized by some characteristics that are essential and other that are desirable to achieve the knowledge centrality.

In 2004, opining on the core competence model (Hamel and Prahalad, 1994) and the concept of intellectual bandwidth (Nunamaker et al., 2001), Miller suggested that an organisation can enhance its performance and increase its competitive standing by carefully assessing its intellectual bandwidth for knowledge creation. This approach is noteworthy as in the concept of ‘intellectual bandwidth’ the author identified four key enablers for knowledge creation making this concept really close to that one of knowledge centrality. These four enablers – that support and speed up the transmission and creation and sharing process within the organization – are: leadership, culture, knowledge creators and technology and communication (Belardo and Belardo 2002; Von Krogh et al., 2000 as quoted in Miller, 2004: 290). Based on this review of the existing conceptual frames of the concept of knowledge centrality, we propose a new conceptual framework that encompasses all facets of this multi-polyhedral concept. (Figure 1).

Figure 1 - A new conceptual framework of knowledge centrality



Source: own elaboration.

3. Hypotheses

Based on the literature review previously presented, we developed 6 hypotheses to test within this study. We grouped these hypotheses under four main topics – human and financial dimension, strategic behavior, and resilience as competitive advantage – that are considered relevant to the concept of knowledge centrality.

3.1. Human dimension

Organizations can be considered as human-techno organizations whose goal is to develop adaptability, resilience and the capacity to deal with new emerging business challenges (Schiuma, 2011). Although knowledge may be supported by advanced technological systems, the human dimension remains a central component in the creation, management, and development of knowledge. The human capital as an intangible asset (Dawson, 2000), often used as synonymous to what many authors refer to as intellectual capital (Roos and Roos, 1997; Marr and Schiuma, 2001; Bontis and Fitz-Enz, 2002) most significantly contributes to an improved competitive position of this organization by adding value to the defined key stakeholders (Marr and Schiuma, 2001).

H1. The investment in employees' knowledge capital and skills has an effect on the knowledge centrality of arts non-profit organizations.

H2. Employees and board's abilities and competences within arts non-profit organizations are more relevant than the technological dimension of the organization in supporting knowledge centrality practices.

3.2. Financial dimension

According to our best knowledge, no prior study analyzed specifically the impact of knowledge-centric practices on financial performance. Most of the organizations focus on financial measures of performance over non-financial measures due to the ease of measurement, often not measuring the performance of their artistic activities (Turbide and Laurin, 2009). Two studies may be considered as a foreground to contextualize the relationship between knowledge-centric practices and financial performance. First, Cullom and Cullom (2011) who analyzed the knowledge-centric practices and their relationship to organizational performance in the non-profit arts sector. Second, Gainer and Padanyi (2002) who identified a causal chain and demonstrated that a customer-focused orientation (here assumed as proxy for knowledge-centric practices) increased artistic reputation and financial resources, contrary to Voss and Voss' negative association (2000a).

H3. Non-profit knowledge-centric arts organizations are more successful in their fundraising activities.

H4. A good knowledge management allows a better monthly financial balance (capital and cash).

3.3. Strategic behavior

As in the strategic management literature, knowledge assets are referred to as resources (Barney, 1991; Grant, 1991; Hall, 1992; 1993; Miller, 2003; Teece, 1998; Moingeon et al., 1998), and as knowledge centric organization is one that integrates the creation and use of knowledge into its mission and strategies (Pemberton and Stonehouse, 2003), an effective use of these resources can be part and affect the strategic behavior of the organization to stabilize its position and getting a competitive advantage (Drucker 1964). Cullom and Cullom (2011) investigated the importance of knowledge-based strategies for nonprofit organizations to ensure sustainability, but no reference was made to the strategic behavior adopted by the organizations. Although some studies (Gilhespy, 1999; 2001; Voss and Voss 2000a; 2000b; Gainer and Padanyi, 2002) considered organization's strategic orientations (product, customer, and competitor orientations) and their association with organizational performance measures and future growth in financial resources, no specific organizational practices were investigated on strategic orientation.

H5. Knowledge centrality implies more strategic decisions for non-profit arts organizations (it could be regarding programming and financing)

H6. The use of knowledge management practices vary with the organisations's characteristics (size, art sectors, geographical context).

3.4. Resilience and competitive advantage

As knowledge has been recognized as a competitive advantage (among others: Drucker, 1964; 1968; 1995; Marr and Schiuma 2001; Pemberton et al., 2002; Miller, 2004; Pemberton and

Stonehouse, 2004), our assumption is that in the arts and cultural sector, this competitive advantage turns into resilience in terms of sustainability of the organisation over time (Cullom and Cullom, 2011). Moreover, this resilience is based on the maximization of the cultural and artistic value despite the economic value (Throsby, 2001; Klamer, 1996) which may prevail in the arts and cultural organizations as they are hybrid identities (Glynn, 2000; Glynn and Abzug, 2002).

H7. A high level of knowledge centrality implies more resilience in non-profit arts organizations.

4. Data and method

We analyze a cross-sectional sample of small and mid-sized nonprofit performing arts organizations in the United States. We define small and mid-sized organizations as those with annual operating budgets of \$1 million or less. Research in the arts and cultural sector commonly uses this categorization when seeking to categorize arts and cultural organizations by size (e.g., Greater Philadelphia Cultural Alliance, 2006, 2015). In the United States, small and mid-sized nonprofit arts organizations comprise 90% of the total population of nonprofit arts and cultural organizations (National Center for Charitable Statistics, 2015). Of these small and mid-sized organizations, performing arts disciplines were selected as a means to add some consistency to the sample by studying organizations that had related missions or programming. Performing arts disciplines were defined per the National Taxonomy for Exempt Entities (NTEE) using codes A60, A61, A62, A63, A65, A68, A69, A6A, A6B, A6C, and A6E. The sample of organizations studied is herein referred to as a “cohort” or “cohort organizations” as a means to specify this group.

Because there are no available sources of data that uniformly measure specific organizational practices of this cohort, an online survey was created to gather primary data on organizations’ attitudes towards their ability to engage in knowledge-centric practices. The online survey comprised 36 Likert Item questions regarding knowledge-centric practices based on the authors’ prior definition of a knowledge-centric arts organization. The survey used a standard 5-point scale (1 meaning the lowest and 5 the highest score) and randomized these questions for each recipient to avoid any potential for bias. The survey also solicited qualitative data on organizational strengths and challenges in knowledge-centric practices as well as attitudinal scoring on how the organizations’ leadership felt they compared to similar organizations in their region, which will be used to support future research. Each survey was to be completed by the organization’s most senior staff member. The 36 attitudinal questions, including some of their descriptive statistics, are listed in Table 1.

The online survey was sent to 3,190 small and mid-sized performing arts organizations that also participate in the Cultural Data Project (the secondary data source as described). The survey - administered between October 20 and November 17, 2014 - had a 47.2% open rate and 30.2% click-through rate. In total, 369 organizations completed the survey and comprised the study cohort. One organization was removed due to it not being classified as a performing arts organization, reducing the cohort size to 368 organizations.

Secondary data on financial and operational performance were gathered from the Cultural Data Project (CDP, now known as DataArts), an organization that collects historic financial and operational data on nonprofit arts and cultural organizations in the United States. Because the CDP currently collects data from organizations in just 14 states and the District of Columbia, the sample of organizations studied was from these states only. This would ensure

that there was both primary and secondary data for each organization studied. Each organization's most recent fiscal year of data available from the Cultural Data Project was used. To avoid the use of older data, the fiscal years were limited to data in the range of years from 2012 to 2014.

A total of 21 financial and operational metrics were calculated for each organization solely from the CDP data. Many of these metrics were based on existing financial and operational metrics that are commonly used and accepted in the field by the entities such as the National Center for Arts Research, TDC, and others. Other relevant metrics were developed during the analysis. The 21 financial and operational metrics (including their main descriptive statistics) are listed in Table 2.

In our analysis, initially, each data source was analyzed separately to provide an initial understanding of the conditions of the cohort. A factor analysis was performed on the 36 independent variables (i.e. knowledge-centric practices) to determine if a reduced number of inter-related variables could be developed and if there were factors that clustered certain practices together. Also, another factor analysis was performed on the set of 21 financial and operational metrics to get a reduced set of dimensions for those metrics as well. This approach provided a more exploratory, inductive method to understanding any associations between knowledge-centric practices and financial and operational performance.

The resulting factors from both analyses were inserted into a second-order structural equation model (SEM) of confirmatory factor analysis, taking into account the small sample problems with bootstrapping techniques (see e.g. Yuan and Bentler 1999; Wolter 2007). This approach allowed us to analyze, on the one hand, the validity of the underlying latent construct of knowledge-centricity, and, on the other, the causal relationships between the variables, testing our initial set of hypotheses. For testing robustness, we finally linked the underlying construct of knowledge centricity also to the original financial and operational metric variables (not previously transformed into factors).

Finally, when exploring the characteristics of the knowledge centric organizations, a composite indicator of knowledge centricity was constructed, following recommendations in the literature, see e.g. Nardo et al. (2008). The indicator was then correlated with the demographic variables (age and size of the organization; geographical location; art sector).

5. Results

a. Descriptive statistics

Table 1 shows the most basic descriptive statistics of the original knowledge-centric variables. The lowest scoring is question q28 ("Our board has helped create a documented succession plan for artistic and executive leadership."), with a mean score of 2.37. Although most of the variables score above the average level of 3.00, there are some other exceptions: questions q1 ("We collect all the necessary data and information we need on our audiences.") with a mean score of 2.86, q23 ("Our board is highly engaged and proactive when it comes to decisions related to day-to-day operations.") with a mean score of 2.83 and q33 ("We regularly attend regional and national conferences to stay abreast of current issues and trends in our field.") with a mean score of 2.83. The highest value is for question q15 ("Our financial accounting systems provide accurate and timely reports on our financial performance.") with a mean score of 4.13, while values at or above 4 are scored also for questions q11 ("Donors can easily make an online contribution on our website."), q21 ("Our board meets at least quarterly, with

a quorum at each meeting.”) and q22 (“We document the minutes of each board meeting, using them as a guide for future meetings.”).

In general, therefore, respondents think that the website, engagement of the board and staff capacity is performing well. On the other hand, they have more negative opinions towards the audience development, more demanding board responsibilities and attending conferences (upgrading skills in the organization).

Table 1 - Descriptive statistics, knowledge centric variables

Variable	Description	mean	std.dev.	n
q1	We collect all the necessary data and information we need on our audiences.	2.86	1.09	368
q2	Our audience data and information is well-organized, accurate, and up-to-date.	3.03	1.14	368
q3	We keep all our audience data and information in a centralized system where all staff who need it can access it.	3.07	1.23	368
q4	We analyze our audience data and information to better understand and grow our audiences.	3.20	1.10	368
q5	We analyze our audience data and information to make strategic programming decisions.	3.02	1.07	368
q6	Audience members can easily purchase tickets on our website.	3.79	1.21	368
q7	We collect all the necessary data and information we need on our donors.	3.29	1.11	368
q8	Our donor data and information is well-organized, accurate, and up-to-date.	3.46	1.11	368
q9	We keep all our donor data and information in a centralized system where all staff who need it can access it.	3.38	1.23	368
q10	We analyze our donor data and information to better understand and grow our donor base.	3.09	1.07	368
q11	Donors can easily make an online contribution on our website.	4.00	1.14	368
q12	All our data and information on all constituents are in a single, centralized system where all staff who need it can access it.	3.09	1.29	368
q13	Our technology systems (computers and software) are up-to-date and run trouble-free.	3.36	1.09	368
q14	Our electronic files are all kept in a central repository (online or on a file server) where all staff can access them.	3.36	1.22	368
q15	Our financial accounting systems provide accurate and timely reports on our financial performance.	4.13	0.88	368
q16	All critical information, data and files are backed up at least on a weekly basis.	3.38	1.30	368
q17	Our website is routinely updated with current, relevant information.	3.99	0.92	368
q18	Our website is easily viewed on a mobile device (smartphone or tablet).	3.71	1.10	368
q19	We are able to measure the reach and impact of our social media efforts.	3.30	1.01	368
q20	Our board members have a clear understanding of our organization’s short and long term goals.	3.80	0.92	368
q21	Our board meets at least quarterly, with a quorum at each meeting.	4.07	1.15	368
q22	We document the minutes of each board meeting, using them as a guide for future meetings.	4.06	0.97	368
q23	Our board is highly engaged and proactive when it comes to decisions related to day-to-day operations.	2.83	1.18	368
q24	Our board is highly engaged and proactive when it comes to decisions related to long-term strategies.	3.36	1.14	368
q25	Our organization has a board-approved strategic plan that is used to guide our operations, programs, and financial planning.	3.25	1.22	368
q26	Our board is highly involved in the creation of our strategic plans.	3.47	1.18	368

q27	Our board and senior staff frequently collaborate to improve organizational operation and management.	3.38	1.01	368
q28	Our board has helped create a documented succession plan for artistic and executive leadership.	2.37	1.11	368
q29	We archive important artistic program materials (e.g. marketing materials, video recordings, etc.) in a single location (physical or online) that is readily accessible.	3.71	1.04	368
q30	Our staff members are effective in their use of our technology systems and tools.	3.75	0.78	368
q31	Staff who need it are provided with the training necessary to effectively use the software and technology needed to run our organization.	3.30	0.99	368
q32	We provide staff with professional development opportunities (workshops, seminars, etc.) to further growth in their positions and careers.	3.18	1.09	368
q33	We regularly attend regional and national conferences to stay abreast of current issues and trends in our field.	2.83	1.22	368
q34	We budget dedicated funds to improve the systems and infrastructure our organization needs.	3.01	1.06	368
q35	All our staff members have the skills and capacity to carry out their job responsibilities effectively.	3.93	0.86	368
q36	All key staff have clear job descriptions and are clear on their roles within the organization.	3.66	0.99	368

Source: Own calculations.

Table 2 shows the descriptive statistics also for the financial and performance metrics. Board members on average tend to give \$1,229.54 of contributed revenue while individuals only \$273.56, lowering the combined average to \$362.79. More than two-thirds of the board members tend to give for the organization. We can find a very low ratio of surplus to deficit (with or without depreciation). Earned revenues represent slightly less than half of the expenses and total revenue, while contributed revenue representing slightly more than half. There are almost 2.4 months of working capital and 4.4 months of available cash as measures of resilience of the organization. Total attendance is on average almost 20,530 visitors, with almost the similar number for touchpoints. Average spending per attendee amounts to \$55.05, while program revenue per attendee is \$20.41. Also, on average almost 4 new works are produced yearly per organization, with wide variation across organizations.

Table 2 - Descriptive statistics, financial and performance metrics

Variable	Description	mean	std.dev.	n
M1	Average Board Member Contributed Revenue	1,229.54	2,578.88	368
M2	Percentage of Board Members Who Give	0.67	0.41	360
M3	Average Individual Contributed Revenue	273.56	1,109.15	368
M4	Average Board and Individual Contributed Revenue	362.79	871.79	368
M5	Average Board and Individual Contributed Revenue (Unrestricted funds only)	348.97	863.42	368
M6	Fundraising Return on Investment	56.05	381.99	368
M7	Fundraising Efficiency	0.11	0.45	368
M8	Surplus/Deficit (with Depreciation)	0.03	0.24	368
M9	Surplus/Deficit (without Depreciation)	0.04	0.25	368
M10	Earned Revenue as a Percent of Expenses	0.44	0.28	368
M11	Earned Revenue as a Percent of Total Revenue	0.43	0.26	368
M12	Contributed Revenue as a Percent of Total Revenue	0.57	0.26	368
M13	Program Revenue per Attendee	20.41	41.52	368
M14	Months of Working Capital	2.37	6.65	368
M15	Months of Available Cash	4.40	13.64	368
M16	Months of Available Unrestricted Net Assets	4.10	13.35	368
M17	Total Attendance	20,528.57	149,113.50	368
M18	Total Touchpoints	20,811.77	149,122.50	368
M19	Spending per Attendee	55.05	75.31	368
M20	Number of New Works Produced/Presented	3.90	20.34	368
M21	Revenue per Program Offering	16,496.81	25,419.45	359

Source: Own calculations.

b. Factor analysis

To initiate an analysis of an association between organizational practices and organizational performance, a factor analysis was run on the 36 organizational practices to reduce the number of independent variables and to assess any inter-correlation among these practices. The factor analysis identified eight key factors (based on latent root, scree plot and explained variance criterion) that describe a majority of the variance. These eight factors can be combined to serve as a measure of knowledge-centricity of each organization. The factors and descriptions are listed in Table 3.

Table 3 - Eight Factors of knowledge-centricity

Factor #	Description
FKC1	Level of board engagement
FKC2	Ability to collect and manage data
FKC3	Strategic use of audience data for programming and audience development
FKC4	Investment in staff training and professional development
FKC5	Effectiveness in using technology systems and website
FKC6	Level of staff capacity, training, and roles
FKC7	Ability to document and report critical information and knowledge
FKC8	Ability to generate revenue online

Source: Own elaboration.

Afterward, another factor analysis was run on the 21 performance metrics (transformed into quartiles to prevent the impact of different units of measurement, as well as the presence of outliers) to reduce the number of dependent variables. The factor analysis identified seven key factors (based on eigenvalues > 1.0 and scree diagram) that describe a majority of the variance. These seven factors and descriptions are listed in Table 4.

Table 4 - Seven Factors of Financial Metrics

Factor #	Description
FFIN1	Contributed revenue
FFIN2	Earned revenues minus contributed revenues
FFIN3	Months of available capital and cash
FFIN4	Attendance and touchpoints
FFIN5	Fundraising success
FFIN6	Surplus/deficit
FFIN7	Number of new works

Source: Own elaboration.

c. Construct(ion) of knowledge-centricity and its basic characteristics

In the next stage, we estimate an SEM/CFA model to validate the latent construct of knowledge centricity. We, therefore, estimate a second-order model, including our estimated factor variables' relationships (of 36 knowledge-centric variables to 8 factors – the relationships are hypothesized by the results of the factor analysis) and relationship to the hypothesized underlying, latent construct of knowledge centricity.

Table 5 presents the results of the modeling, showing that all eight factors are very strongly ($p \leq 0.001$) related to the underlying construct. Of them, the strongest in value is the fifth one, namely “Effectiveness in using technology systems and website”, followed by the sixth (“Level of staff capacity, training, and roles”) and seventh (“Ability to document and report critical information and knowledge”) one. The lowest coefficients are for the second (“Ability to collect and manage data”) and eighth (“Ability to generate revenue online”) one. This shows that some capabilities which scored highest (level of staff capacity, effectiveness in using technology) are also the most significantly related to the concept of knowledge centricity, but ability to generate revenue online, which also scored quite high, are less important. Also, “Strategic use of audience data for programming and audience development” (which scored low on descriptive statistics) has an average impact which shows that rush generalizations would be premature at this point. On the other hand, the results from Table 5 show that the model has a reasonable, while not an optimal fit.

Table 5 - Results of the basic, concept validation model

Variable effect	Variable cause	Coefficient	z	P>z
FKC1	KnowCent	1.000		
FKC2	KnowCent	0.788	5.469	0.000
FKC3	KnowCent	1.110	5.878	0.000
FKC4	KnowCent	1.127	6.561	0.000
FKC5	KnowCent	1.757	6.498	0.000
FKC6	KnowCent	1.380	6.560	0.000
FKC7	KnowCent	1.338	5.917	0.000
FKC8	KnowCent	0.721	3.312	0.001

Source: Own calculations.

On the basis of those relationships, we construct a composite measure/index of knowledge centrality, to explore in more deepness the “sociodemographic” characteristics of the construct. We assign each factor its weight as its coefficient in the structural equation model in Table 5.

Our equation for the composite indicator is, therefore, the following:

$$\begin{aligned}
 KnowCent = & FK C1 + 0.788 * FK C2 + 1.110 * FK C3 + 1.127 * FK C4 + 1.757 * FK C5 \\
 & + 1.380 * FK C6 + 1.338 * FK C7 + 0.721 \\
 & * FK C8
 \end{aligned}
 \tag{1}$$

We define four firm-level “demographic” variables as:

- *Age of organization* – five categories, 1: 5 or less years of age; 2: 6 to 10 years of age; 3: 11 to 20 years of age; 4: 21 to 50 years of age; 5: more than 50 years of age;
- *Budget size* in quintiles of total distribution;
- *Art sectors*: Dance, Humanities storytelling, Interdisciplinary, Multidisciplinary, Music, Opera/Musical Theatre, Theatre;
- *States*: Arizona, California, Connecticut, District of Columbia, Illinois, Maryland, Massachusetts, Michigan, Minnesota, New York, Ohio, Pennsylvania, Rhode Island, Texas, Vermont, Virginia.

Table 6 shows the distribution of the knowledge centrality composite indicator (KC) by age and size of the firm. Clearly, the KC indicator is dependent upon size of the firm – the larger the firm, the more it is prone to knowledge centric practices. This can be explained by larger organizations needing to have more advanced or better organizational structures and practices to manage their knowledge, namely the size implies more organizational “structure” and intensity of knowledge management. This finding, which is important and shows the presence of economies of scale in this case, is also robust to many specifications: different versions of the construction of the index, conditioning on state and sector and even to the choice of different dimensions of knowledge centrality (it holds for six out of eight constructed factors).

Furthermore, it seems that the youngest and oldest firms tend to be more knowledge centric than the medium aged ones. We can explain this as the old firms have KC based on their experience (long term perspective, they passed the test of time) while the young ones, established most likely in a period of global financial crisis, are more proactive in adapting to the changing environment and they understood the relevance of KC practices as means to survive and being more resilient, which relates to the concept of the competitive advantage.

Table 6 - Values of the knowledge centrality composite indicator by age and size of the firm

age of the firm	mean	sd	median	n	budget size	mean	sd	median	n
5 or less	-0.1162	4.4499	-0.0504	19	bottom quintile	-1.4541	5.2628	-1.2269	74
6-10	-0.2894	5.1064	-0.5558	44	second quintile	-0.8173	4.6242	-1.2743	74
11-20	-0.3492	5.0234	-0.0505	106	third quintile	0.3281	4.9634	1.0052	73
21-50	0.3144	4.7978	0.1643	154	fourth quintile	-0.0646	4.2338	-0.5539	74
more than 50	0.2824	5.0298	0.7534	45	top quintile	2.1655	4.6794	2.5289	73

Source: Own calculations.

Table 7 displays also the distribution over the art sector and US state of the firm. As for the art sector, interestingly, Dance and Opera/Musical Theatre are among the most KC intensive

sectors, while Music and, in particular, Theatre, seem to be among the least KC intensive ones. The most likely explanation could lie in the high dispersion of all the variables, as some of the Theatre and Music organizations are located at the very top of the KC indicator, while several of them are also at the very bottom. Furthermore, some states with more observations/firms, like California, Massachusetts and Pennsylvania seem to be performing far better than some other similar ones, such as Maryland and, in particular, New York.

Table 7 - Values of the knowledge centrality composite indicator by art sector and US state of the firm

Art sector	mean	sd	median	n	State	mean	sd	median	n
Dance	0.3293	5.0813	0.3237	59	Arizona	-4.0168	4.6100	-5.7216	9
Humanit.Storytel.	3.2665	.	3.2665	1	California	0.2247	4.6115	0.8676	69
Interdisciplinary	0.6399	5.8789	1.3628	9	Connecticut	-3.2972	.	-3.2972	1
Multidisciplinary	-0.4712	3.9903	0.3644	27	Distr. of Columb	3.0088	4.3957	1.7570	7
Music	0.0010	4.7248	-0.1337	148	Illinois	-0.1446	4.8341	-0.8913	46
Opera/Mus.Theat.	2.5033	3.4143	2.5077	18	Maryland	-0.4279	7.6221	0.4802	16
Theatre	-0.4885	5.3144	-1.3888	106	Massachusetts	1.3873	5.3716	-0.3150	18
					Michigan	0.4978	4.5363	-0.6833	17
					Minnesota	0.4064	4.8295	0.7237	25
					New York	-0.5342	4.4466	-0.7254	73
					Ohio	1.1681	4.7539	1.8426	11
					Pennsylvania	0.1676	4.7806	0.4672	60
					Rhode Island	-2.4057	7.4344	-3.8287	3
					Texas	-2.0226	4.8294	0.0171	7
					Vermont	3.5539	5.7031	2.6542	4
					Virginia	2.6013	0.1024	2.6013	2

Source: Own calculations.

Due to large dispersion in the values of the variables, we also perform several regressions, following the usual OLS models. The tests show all of the basic assumptions of the linear regression models are satisfied. Firstly, we insert only the dummies for each individual “demographic” variable, the results are shown in Table 8, first four models. We see that no special statistically valid relationship can be discerned for art sector, while there is a clear relationship to size, as explained previously – the larger the size of the organization, the more it is knowledge centric. Furthermore, Opera/Musical Theatre is clearly the most KC intensive art sector among the analyzed ones.

When inserting all variables into the model, the relationships are confirmed. Among the US states, interestingly, California, District of Columbia, Maryland and Virginia seem to be the ones with most KC intensive firms, while e.g. Massachusetts and New York lose its significance. The comparison state is the worst scoring of them all, Arizona.

Table 8 - Regressions of knowledge centrality composite indicator to the demographic characteristics of firms

	Coef.	t	P>t	Coef.	t	P>t	Coef.	t	P>t	Coef.	t	P>t	Coef.	t	P>t
6-10 y.	-0.1732	-0.13											-0.7652	-0.56	
11-20 y.	-0.2330	-0.19											-1.3622	-1.08	
21-50 y.	0.4306	0.36											-0.7464	-0.59	
>50 y.	0.3986	0.30											-0.9877	-0.68	
2 budg. q.				0.6368	0.81								0.8781	1.05	
3 budg. q.				1.7822	2.27	**							1.8577	2.21	**
4 budg. q.				1.3896	1.77	*							1.5098	1.77	*
5 budg. q.				3.6196	4.60	***							3.7611	4.38	***
Dance							0.8177	1.03					1.0470	1.29	
Hum. St.							3.7550	0.76					5.0046	1.00	
Interd.							1.1283	0.66					1.3942	0.83	
Multid.							0.0173	0.02					0.4752	0.43	
Music							0.4895	0.79					0.7658	1.19	
Opera							2.9918	2.40	**				3.5764	2.87	***
CA										4.2415	2.45	**	3.4449	2.00	**
CT										0.7196	0.14		1.3367	0.26	
DC										7.0256	2.86	***	7.0585	2.92	***
IL										3.8722	2.18	**	2.8972	1.64	
MA										3.5888	1.77	*	3.1552	1.56	
MD										5.4040	2.71	***	4.4053	2.22	**
MI										4.5146	2.24	**	3.6616	1.80	*
MN										4.4232	2.33	**	3.5217	1.86	*
NY										3.4826	2.02	**	2.6957	1.57	
OH										5.1848	2.36	**	4.0731	1.86	*
PA										4.1844	2.40	**	3.3777	1.94	*
RI										1.6111	0.50		1.8572	0.58	
TX										1.9941	0.81		1.8383	0.75	
VA										7.5706	2.58	**	7.3412	2.55	**
VT										6.6181	1.74	*	4.2104	1.11	
Constant	-0.1162	-0.10		-1.4541	-2.63	***	-0.4885	-1.03		-4.0168	-2.47	**	-4.6533	-2.31	**
Nr. Obs.	368			368			368			368			368		
F stat.	0.37			6.12	***		1.15			1.17			1.75	**	
Adj. R sq	-0.0069			0.0529			0.0024			0.0068			0.0560		
Root MSE	4.9131			4.7649			4.8903			4.8794			4.7570		

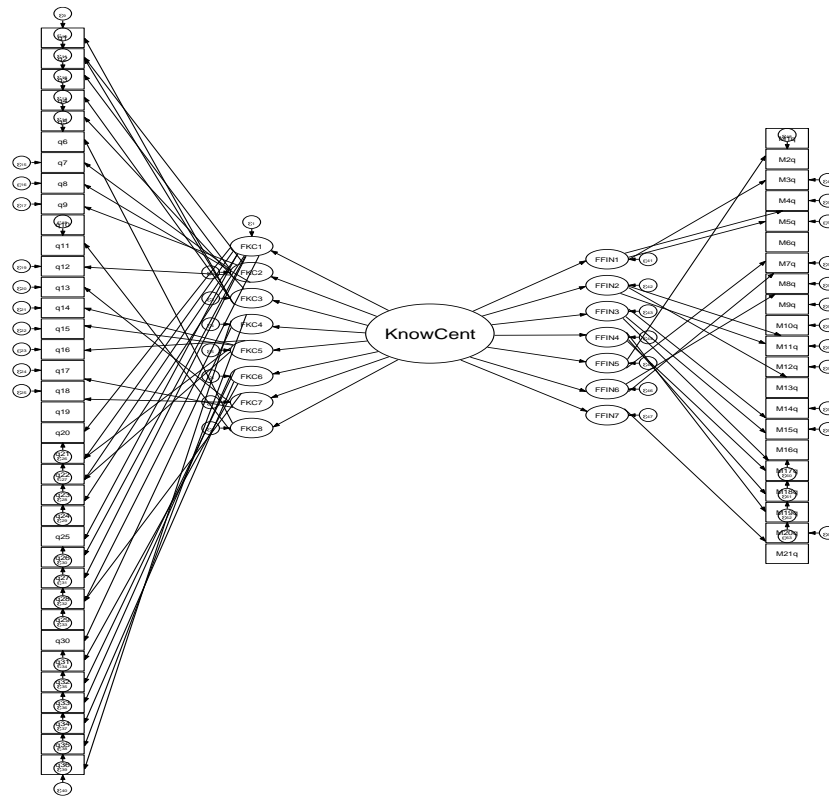
Notes: Statistical significance: * – 10%; ** – 5%; *** – 1%.

Source: Own calculations.

d. Relationship between knowledge centrality and financial performance

We proceed by estimating a full model, including also causal paths to the financial metric variables/factors. The model we estimate is shown in Figure 2. We, again, estimate the hypothesized relationship between factors of knowledge centrality and original financial metric variables based on the results of the respective factor analysis.

Figure 2 - The main estimated SEM/CFA model



Source: Own elaboration.

In Table 9 we present the results of the model with no modifications done (i.e. on the basis of the usual modification indices). We, firstly, note that again all of the eight knowledge-centric factors are strongly significantly related to the concept of knowledge centrality with the same relationship is the size of the coefficients. Moreover, several financial metric factors are strongly related to by the knowledge-centric practices:

- FFIN1: Contributed revenue;
- FFIN3: Months of available capital and cash;
- FFIN4: Attendance and touchpoints;
- FFIN5: Fundraising success (the significance of the coefficient of this factor is in the limit of 15%).

On the other hand, there are no relationships for:

- FFIN2: Earned revenues minus contributed revenues;
- FFIN6: Surplus/deficit;
- FFIN7: Number of new works.

This implies some relevant considerations, which significantly enlighten our view on the importance of knowledge-centric practices for the performance of the organization and are shown to be robust also in the later analysis:

- 1) Knowledge-centric practices have a significant effect on the performance of the organization as related to a) board and individual engagement; b) resilience of the organization; c) marketing and audience development. Particularly strong appear the relationships to resilience (FFIN3) and audience development (FFIN4). With this in mind, the findings from the descriptive statistics (Table 1) show that the US performing

arts organizations should invest more in audience development knowledge-centric practices, which are a key component to the relationship of knowledge-centric practices and performance of the organization.

- 2) Knowledge-centric practices have no effect on the monetary financial performance of the organization, and, interestingly, on the (main performance measure) of the production of new works. This shows that, definitely, knowledge-centric practices will not directly improve performance of the most “hard” performance measures, but affect mainly the indirect performance measures described under previous point. Moreover, they are not improving the direct financial performance of the organization as shown in higher earned revenues and surpluses of the organization.

Table 9 - Results of the full model, without modifications

Variable effect	Variable cause	Coefficient	z	P>z
FKC1	KnowCent	1.000		
FKC2	KnowCent	0.831	5.483	0.000
FKC3	KnowCent	1.048	5.606	0.000
FKC4	KnowCent	1.136	6.451	0.000
FKC5	KnowCent	1.773	6.405	0.000
FKC6	KnowCent	1.341	6.368	0.000
FKC7	KnowCent	1.308	5.729	0.000
FKC8	KnowCent	0.827	3.645	0.000
FFIN1	KnowCent	0.522	3.083	0.002
FFIN2	KnowCent	-0.007	-0.039	0.969
FFIN3	KnowCent	0.884	3.732	0.000
FFIN4	KnowCent	0.868	4.092	0.000
FFIN5	KnowCent	0.250	1.602	0.109
FFIN6	KnowCent	-0.012	-0.064	0.949
FFIN7	KnowCent	-0.053	-0.239	0.811

Source: Own calculations.

When looking at results from Table 12 we see that the fit of the model in Table 9 is again reasonable, but could be improved (e.g. it doesn't satisfy the usual criteria that RMSEA should be at 0.05 or lower, see e.g. Kline, 2010). To this end, we include several restrictions, as suggested by the modification indices (we only include the ones with modification indices higher than 30).

With such modifications, the fit of the model in Table 10 is finally satisfactory (as shown in Table 12). On the other hand, there are no notable changes in size, significance or sign of the coefficients in the model from the results in Table 9.

Table 10 - Results of the full model, with modifications

Variable effect	Variable cause	Coefficient	z	P>z
FKC1	KnowCent	1.000		
FKC2	KnowCent	0.660	4.705	0.000
FKC3	KnowCent	1.347	5.851	0.000
FKC4	KnowCent	1.170	6.347	0.000
FKC5	KnowCent	1.851	6.332	0.000
FKC6	KnowCent	1.374	6.252	0.000
FKC7	KnowCent	1.382	5.740	0.000
FKC8	KnowCent	0.852	3.651	0.000
FFIN1	KnowCent	0.522	3.015	0.003
FFIN2	KnowCent	-0.007	-0.038	0.970
FFIN3	KnowCent	0.883	3.643	0.000
FFIN4	KnowCent	0.882	4.045	0.000
FFIN5	KnowCent	0.233	1.467	0.142
FFIN6	KnowCent	-0.047	-0.240	0.811
FFIN7	KnowCent	-0.043	-0.193	0.847

Source: Own calculations.

Finally, we test the robustness of our findings with also including the individual financial metrics from Table 2 in the analysis instead of the derived factors. To this end, we include seven metrics³:

- M1: Average Board Member Contributed Revenue
- M2: Percentage of Board Members Who Give
- M3: Average Individual Contributed Revenue
- M4: Average Board and Individual Contributed Revenue
- M5: Average Board and Individual Contributed Revenue (Unrestricted funds only)
- M15: Months of Available Cash
- M21: Revenue per Program Offering

Results of Table 11 confirm the significance of the effect of knowledge centrality on all those seven metrics, which in particular confirm the effect of knowledge centrality on contributed revenues, resilience, with also some slight effect on program performance (the variable which is not represented in any factor of financial metrics). Interestingly, the significance of most of the factors related to knowledge centrality is lowered, leaving only the FKC2 (Ability to collect and manage data); FKC4 (Investment in staff training and professional development) and FKC5 (Effectiveness in using technology systems and website), as the relevant ones. It could be a sign that the above three factors/dimensions of knowledge centrality have a stronger role, in particular when considering the effects of knowledge-centric practices on the financial performance.

In the model, we already included modifications by the modification indices. As shown in Table 12, this model has even the best fit as shown by RMSEA statistics, while being slightly behind the fit of the model in Table 10 in other criteria.

³ As suggested by the highest correlation to the construct of knowledge centrality, having significance lower than 0.05.

Table 11 - Results of the model with individual financial metrics, with modifications

Variable effect	Variable cause	Coefficient	z	P>z
FKC1	KnowCent	1.000		
FKC2	KnowCent	1.566	1.736	0.083
FKC3	KnowCent	-0.166	-0.379	0.705
FKC4	KnowCent	0.948	1.694	0.090
FKC5	KnowCent	1.870	1.754	0.079
FKC6	KnowCent	0.617	1.060	0.289
FKC7	KnowCent	0.101	0.152	0.879
FKC8	KnowCent	2.178	1.553	0.121
M1q	KnowCent	9.609	1.965	0.049
M2q	KnowCent	2.846	1.808	0.071
M3q	KnowCent	13.967	1.981	0.048
M4q	KnowCent	13.248	1.987	0.047
M5q	KnowCent	12.986	1.986	0.047
M15q	KnowCent	5.071	1.887	0.059
M21q	KnowCent	5.323	1.916	0.055

Source: Own calculations.

Finally, Table 12 confirms that all four analyzed models have a solid and reasonable fit to the data, with the third one (the full model with modifications) slightly outperforming all the others, except for the RMSEA statistics where the final, the fourth one dominates.

Table 12 - Goodness of fit for all analyzed models

Model	Chi Sq. [p value]	Normed Chi-Sq.	CFI	TLI	RMSEA	SRMR
Validation	1130.97 [0.000]	2.342	0.852	0.838	0.060	0.066
Full, without modifications	2335.25 [0.000]	2.018	0.917	0.912	0.053	0.075
Full, with modifications	2207.445 [0.000]	1.915	0.926	0.921	0.050	0.075
Individual fin. metrics	1159.816 [0.000]	1.678	0.921	0.911	0.044	0.078

Source: Own calculations.

6. Conclusion

In this article, we propose a new theoretical framework of the concept of knowledge centrality and its implications on the organizational and financial performance of non-profit performing arts organizations. Moreover, this conceptual framework has been tested on a cross-sectional sample of small and mid-sized non-profit performing-arts organizations in the United States whose data have been collected via an on-line survey administered in the period October 20 and November 17, 2014. The focus of the paper was on the relationship between knowledge-centric practices and operational performance measures to understand, and potentially address, many challenges facing non-profit arts and cultural organizations. The factor analysis conducted on organizational practices brought forth eight thematic variables that represented a majority of the total variance, serving as a measure of knowledge-centrality, which was validated by SEM analysis. Furthermore, several relationships between knowledge-centric and performance metric characteristics of organizations were found. These relationships relate to issues of staff training and development, technology utilization, audience development, and financial sustainability.

The implications for the validation of our initial set of hypotheses are substantial. We present our discussion in sequential order.

H1. The investment in employees' knowledge capital and skills has an effect on the knowledge centrality of the arts non-profit organizations.

The hypothesis is strongly confirmed. Not only are both knowledge-centrality related factors (FKC4 and FKC6) firmly affected by our latent construct. It is also after we include in the analysis the direct financial performance measures (Table 11) that one of them, namely FKC4 (Investment in staff training and professional development) remains significant. Investment in staff knowledge capital and skills is therefore strongly related to the knowledge-centric practices in performing arts' firms.

H2. Employees and board's abilities and competences within arts non-profit organizations are more relevant than the technological dimension of the organization in supporting knowledge centrality practices. The hypothesis is clearly rejected. The main technological factor of knowledge centrality – FKC5 – is among the most strongly significant dimensions of the knowledge centrality construct. It remains significant also in the final model of Table 11.

H3. Non-profit knowledge-centric arts organizations are more successful in their fund-raising activity.

We cannot strongly confirm the hypothesis. The financial performance factor of fundraising was on the threshold of statistical significance in most models and no direct financial performance measure (see Table 11), specifically related to fundraising, was correlated to the knowledge centrality construct.

H4. A good knowledge management allows a better monthly financial balance (capital and cash). We cannot confirm the hypothesis. No measure and/or factor, related to financial balance and any of the “hard”/monetary financial measures were correlated to the knowledge centrality construct.

H5. Knowledge centrality implies more strategic decisions for the non-profit arts organizations (it could be regarding programming and financing, etc.)

We can confirm the hypothesis, in particular for the strategic decisions related to sustainability of the organization, audience development, and board contributions.

H6. The use of knowledge management practices vary with the organisations' characteristics (size, art sectors, geographical context).

Clearly confirmed. Furthermore, a strongly significant and positive relationship of knowledge centrality to the organization size has been established, showing that larger organizations tend to be more knowledge centric. We explained this by larger organizations needing to have more advanced or better organizational structures and practices to manage their knowledge, namely the size implies a more intensive knowledge management.

H7. A high level of knowledge centrality implies more resilience in non-profit arts organizations.

We are able to strongly confirm the hypothesis. Not only was the factor FFIN3, “Months of available capital and cash” strongly significant and positive in all models, furthermore, in Table 11, the direct measure of “M15: Months of Available Cash” was also statistically significantly related to knowledge centrality.

From our analysis, it is clearly evident that the principles of knowledge centrality can be applied to non-profit arts organizations as they generate and manage knowledge to advance

their goals and missions. However, the competitive advantage provided by a successful knowledge management first, and by being a knowledge centric organization, second, does not imply superior financial performance as it may happen in the traditional business. Knowledge-centric practices have significant effects on the performance of the organization as related to the sustainability of the organization. This is an important finding that is in line with Drucker: “To remain competitive - maybe even to survive – businesses will have to convert themselves into organizations of knowledgeable specialists” (Drucker, 1998: 11). Thanks to their knowledge-centric practices non-profit arts organizations can become more resilient. This resilience represents the guarantee their survival and supports their adaptability to their cultural, economic and social ecosystem. Moreover, this adds some evidence to the specific mission of non-profit arts organizations: the maximization of cultural values.

The findings are timely and open up additional areas of investigation that are immediately relevant to the field. More specifically, the practices studied in this paper could serve as a guide for organizations to utilize as they seek to improve their ability to become knowledge-centric. Additional queries arise including how to address the discrepancy between perceived strengths and actual organizational performance, how to strategically leverage the linkage between knowledge-centric practices and organizational performance, and how knowledge-centric practices could help arts and cultural organizations navigate challenging financial and operational conditions. The findings of this research can also be used by institutions that provide financial support and technical assistance for arts organizations to understand better how their resources could be optimally utilized by those they support. Finally, this research lays a foundation for future studies that could examine a broader cohort of nonprofit arts organizations as well as analyze longitudinal data on organizational practices and financial performance. As the first comprehensive, empirical study of knowledge centrality in non-profit arts organizations, this research can, therefore, benefit the field by helping arts and cultural organizations understand the importance of knowledge-centric practices, improve their capabilities, and serve as a means for understanding and potentially addressing many challenges.

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