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An International Forum | February 2020 | Volume 31 Number 1

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Original Research

Determining the University's Position in a Multi-stakeholder Collaborative Network

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Cite as: Evans Reding, T. & VanWyngaarden, K. (2019). Determining the University's Position in a Multi-stakeholder Collaborative Network. *Metropolitan Universities*, 31(1), 3-23. DOI: 10.18060/22604

Editor: Valerie L. Holton, Ph.D.

Abstract

Complex problems are being approached through collaborations that cross sectors including businesses, nonprofits, public institutions, and academia. Social Network Analysis (SNA) methods have been adopted to help manage these large collaborations, and it is useful not only for exploring the network dynamics of the collaboration as a whole, but also for exploring where an individual organization lies within the network. Universities can benefit from understanding their position and ties within a network and utilize that information to strengthen their position within these collaborations while fostering collaborations within the network. This study applied SNA to determine the influential position of an urban university within a multi-stakeholder collaborative network (MSCN). The university in this study holds more formal intra-sector relationships and more informal inter-sector relationships with the organization types in the MSCN. The findings also show that the university does hold a prominent position within the informal network of the MSCN; however, it does not hold a position of prominence within the formal network of the MSCN. Fostering these formal and informal relationships would allow the university to strategically promote beneficial collaborations for the university and the network as a whole.

Keywords: collaboration management, cross-sector collaborations, social network analysis, social capital

Introduction

Collaborations among stakeholders from private, nonprofit, and public sectors that focus on addressing complex problems through the innovative combination of their knowledge and resources have become increasingly popular (Becker & Smith, 2018). These collaborations have been referred to as multi-stakeholder collaborative networks (MSCNs), and within MSCNs, universities are a key element because they produce human capital and contribute to innovation production through the development of new knowledge (Etzkowitz et al., 2000). Universities have also been shown to develop innovation networks within their communities (Benneworth & Hospers, 2007). One increasingly complex issue that requires the development of innovation networks to target is the Science, Technology, Engineering, and Mathematics (STEM) workforce shortage. Developing local and regional STEM Learning Ecosystems has been identified as one of the solutions. STEM Learning Ecosystems are localized MSCNs that are "dynamic collaborations among school, out-of-school time programs, STEM expert institutions (such as museums, science centers, institutions of higher education, and STEM professional associations), the private sector, community-based organizations, youth and families" (STEM Ecosystems, 2018). STEM Learning Ecosystems aim to provide the structure through which high-quality and cross-sector learning is available to all learners, resulting in the development of important skills and engagement within STEM disciplines necessary to develop and nourish the STEM workforce (STEM Ecosystems, 2018).

There are currently 84 STEM Learning Ecosystems that comprise the global STEM Ecosystems Community of Practice, including the Omaha STEM Ecosystem (OSE), which serves the Omaha, NE metropolitan area. The member organizations of the OSE comprise a variety of stakeholder groups including multinational companies, educational institutions, non-profit organizations, and science centers and museums. Within the OSE, the University of Nebraska at Omaha (UNO) has taken a large leadership role as one of the two founding institutions, as well as maintaining a strong presence on the OSE Founders board and the OSE Steering Committee. One of the guiding principles of the OSE is to:

> Sustain an overarching structure to bring community partners together to advance STEM learning as a priority in Omaha. We welcome diverse partners and experiment with innovative ways for engagement. By creating a network of community organizations, we provide a venue for collaboration around solutions to STEM issues and leveraging of resources (OSE Steering Committee, 2017).

This guiding principle clearly outlines the intention of the OSE to develop and foster an innovative and capacity building network to address the STEM workforce shortage in the Omaha metropolitan area. UNO's intense involvement in the OSE provides ample opportunity for it to help manage this collaborative network and its own network position. In order to do this, UNO

must evaluate the overall network structure in order to understand the existing ties of the overall network, as well as UNO-specific ties, in order to improve network innovation. With this knowledge, UNO can help the OSE focus efforts in order to maintain current ties while also facilitating the development of new ones.

In order to focus the efforts of a MSCN, such as the OSE, the network itself must be evaluated, which may be done through Social Network Analysis (SNA) in order to improve collaboration management. SNA is the methodology utilized to examine formal and informal relationships by investigating relational concepts, processes, and patterns within a social network. A social network is multi-faceted and may be described as a business, university, school, neighborhood, organization, or even a family. The participants in these networks are known as actors, and it is their interactions and relationships, known as ties, that are examined within SNA studies (Borgatti & Ofem, 2010; Kenis & Oerlemans, 2007; Wasserman & Faust, 1994).

The purpose of this article is to present a method employed by UNO and the OSE, which evaluates the development of its network by examining the presence and absence of ties, individual actor positions, and whole network metrics. SNA has been used by the OSE to evaluate its network and make strategic plans based on the data.

Social Network Analysis, Social Capital, and Innovation

As previously mentioned, MSCNs, such as the OSE, depend on the relationships present amongst the members, and many collaborations are recognizing the importance to analyze these relationships using SNA for management purposes. Social Capital (SC) has been identified as a popular theory used within SNA studies to help when managing innovation in collaborations. SC is often referred to as the actual and potential resources within a network because of the relationships present (Nahapiet & Ghoshal, 1998). Various dimensions of SC can be targeted; however, this study focuses on relational SC and structural SC. Relational SC refers to the underlying nature of the ties that are present amongst the actors within a network and is measured through network density, which represents the number of ties present as compared to the number of ties possible. Relational SC results from a history of interactions and has been shown to result in trust and the development of norms in cross-sector alliances, which aids in the flow of knowledge and willingness to collaborate on innovations (Vlaisavljevic, Cabello-Medina, & Pérez-Luño, 2016; Zach & Hill, 2017). The majority of research dedicated to the role of relational SC with regards to innovation has focused on analysis and development efforts within the pharmaceutical and technology sectors; researchers have found no existing scholarship that focuses on the relational SC of MSCNs, such as STEM learning ecosystems.

Due to the diverse nature of stakeholders within a MSCN, it is expected that certain organization types will bring varying degrees of relational SC with one another due to previous

collaborations, and typically, organizations within the same sectors seem to have existing ties (Reding, Sigmon, Jafri, Smith-Walker, Meyer, 2017). This clustering of relationships within sectors may also be due to a network phenomenon known as homophily, where actors tend to have ties with others that share certain commonalities such as attitudes, experiences, and education (McPherson, Smith-Lovin, Cook, 2001). Homophily has been shown to facilitate relationships through ease of communication because of these commonalities (McPherson, et al., 2001). Networks that are examined through a relational SC lens will result in varying degrees of ties because of the intent of the surveys. This study investigated formal and informal networks, since survey questions aimed to determine the nature of the existing relationships present in the OSE. The informal network represents the ties that were present in the network based on non-prescriptive and non-professional ties. Informal networks highlight the presence of loose ties. Further, informal ties can be used as the basis of developing and promoting new collaborations (The Connected Company, n.d.).

The formal network in this study represents the ties that were present in the network based on a history of collaboration. The identification and examination of these formal networks is important because they have been shown to increase the probability of future collaborations and innovation (Zach & Hill, 2017). Based on the information thus far, we present our first hypotheses:

H1. Within the informal network, the relational SC of 4+ year organizations (UNO) will be lower for intra-sector ties rather than inter-sector ties through the demonstration of network density.

H2. Within the formal network, the relational SC of 4+ year organizations (UNO) will be greater for inter-sector ties rather than intra-sector ties through the demonstration of network density.

While relational SC has been shown to increase the probability of future collaborations and innovation, one study has shown that the structural SC of an actor is a better measure of whether they will be involved in future collaborations (Zach & Hill, 2017). The importance of the structural SC in predicting and managing collaboration necessitates its inclusion in this study. Structural SC refers to how the patterns of ties determine the amount of SC present, not only to individual actors within the network, but to the network as a whole. Metrics within structural SC studies involve examining the positional centrality of the actors within the network. While there are numerous types of centrality metrics, two of the most common are degree and betweenness. Degree centrality is a measure of the number of ties an actor possesses as compared to the number of ties possible within the boundaries of the network. A high degree centrality indicates actors that have an increased awareness of others' knowledge, which allows for easier knowledge transfer (Brandon & Hollingshead, 2004; Nahapiet & Ghoshal, 1998). These

members are often called hubs and increase the scale of adoption of new innovations by passing on new knowledge to many actors (Goldenberg, et al., 2009; Rogers, 2010).

The other centrality metric, betweenness, looks at how often an actor acts as a link between two otherwise unconnected actors within the boundaries of the network. High betweenness indicates an actor that is able to moderate the flow of knowledge, has access to relatively new knowledge, is positively correlated with innovation, and increases the rate of innovations (Liu, Sidhu, Beacom, & Valente, 2017; Rogers, 2010; Shaw-Ching, Madhavan & Sudharshan, 2005). These actors are known as bridges or gatekeepers. It has been suggested that there are actors within networks that can hold positions of both hubs (high degree centrality) and gatekeepers (high betweenness centrality) (Guimarães et al., 2013). A previous study used a new methodology involving the determination of actors who act as both hubs and gatekeepers to determine emergent teacher leaders within a computer science education cohort (Reding, Dorn, Grandgenett, Siy, Youn, Zhu, & Engelmann, 2016). This current study adapted that methodology to determine which organization types within the OSE act as both gatekeepers and hubs by calculating a combined centrality score.

Historical network data used by the OSE shows that, on average, the organization types in the Academic stakeholder category tend to have lower numbers of loose ties than the organization types in the other categories. The same data show that, on average, the organization types in the Academic stakeholder category tend to have higher numbers of formal ties than the organization types in the other categories (Reding, et al., 2017). Through the possession of these different types of ties, the centrality scores of each organization type, including the 4+ year organization type (UNO), will be different in the different networks (i.e., formal and informal).
This brings us to our final hypotheses:

H3. Within the informal network, the 4+ year organization type (UNO) will possess a relatively low structural SC through the demonstration of one of the lowest combined centrality scores.

H4. Within the formal network, the 4+ year organization type (UNO) will possess a relatively high structural SC through the demonstration of one of the highest combined centrality scores.

Methodology

The purpose of this study was to develop a methodology to determine the position of an urban university within a MSCN. A document analysis of a digital survey administered via emailing an OSE listserv was utilized. SNA methods were used in this study. Eighty-six individuals who elected to complete the online survey comprise the population of this study. The respondents were asked to report the level of interaction they had experienced with members of various organization types within the OSE.

Data Collection

The first step in the data collection process was to assign an identification number to each respondent. The next step was to codify the various categorical factors of organization type, stakeholder category, asset type, and interaction level. Each organization received a nominal value and the possible organization types the respondents could select included 2 Year College, 4+ Year College, Business with less than 50 employees, Business with 51-200 employees, Business with more than 200 employees, Career or Technical Training, Charitable Foundation, Civic Organization, Faith Based Organization, Parent/Neighborhood Organization, Private P-12 Education, Public P-12 Education, Science Centers and/or Museums and Libraries, Youth Serving Organizations, Military, Government, and Other. Next, a nominal identifier based on the three stakeholder categories of Academic, Business, or Nonprofit was assigned. The nominal values and identifiers (ID) for the organization type can be found in Table 1.

TABLE 1. Nominal ID and abbreviation by organization type

Organization Type	Abbreviation	Nominal ID
Academic Sector		
2 Year College	2yr	1
4+ Year College	4yr	2
Career and/or Technical Training	CTT	3
Private P-12 Education	PrvP12	4
Public P-12 Education	PubP12	5
Business Sector		
Business with less than 50 Employees	<50	6
Business with 51-200 Employees	51-200	7
Business with more than 200 Employees	>200	8
Nonprofit Sector		
Charitable Foundation	CF	9
Civic Organization	CO	10
Faith-based Organization	FBO	11
Parent/Neighborhood Organization	PNO	12
Science Centers/Museums/Libraries	SCML	13
Youth Serving Organization	YSO	14
Military	MIL	15
Government	GOV	16
Other		17

Next, the interaction levels were assigned ordinal values of "0," "1," or "2." The ordinal values of the interaction levels can be found in Table 2.

TABLE 2. Ordinal ID by interaction level

Relationship	Interaction Level	Ordinal ID
I am not familiar with anyone in this category	No Interaction	0
I am familiar with someone in this category but we did not work together in a professional manner	Informal Interaction	1
We shared professional advice and/or materials when opportunity arose	Informal Interaction	1
We worked side-by-side as separate organizations but did not have a formal agreement	Formal Interaction	2
We worked together as a formal team with an established formal agreement (such as a memorandum of agreement)	Formal Interaction	2

Determining Relational Social Capital

Once interaction level frequencies were determined, an adjacency matrix for both the informal and formal relationship levels were generated. These matrices were then used to determine density, which represented the relational SC of each organization type based on the interaction levels that were previously determined. Density is a measure of the number of ties that are reported as compared to the number of possible ties that could exist. The intra-sector density and inter-sector density for the informal and formal networks were calculated for each organization type (refer to Table 1 for organization types and their sectors). The intra-sector density for the informal network for the Academic organizations was calculated based on the number of possible ties present within the Academic sector which included the organization types of 2-year College, 4+ year College, Private P-12 Education, and Public P-12 Education (Career and Technical Training were not included because there were no respondents from this organization type). For example, if 4+ year Colleges reported informal ties with other 4+ year Colleges and Private P-12 Education, but not with 2-Year Colleges and Public P-12 Education, then the informal network intra-sector density for 4+ year Colleges would be 2 out of 4, or a density of 0.50. The inter-sector density for both networks for the Academic organizations were calculated based on the number of possible ties within the Business and Nonprofit sectors which included the organization types of Business with less than 50 employees, Business with 51-200 employees, Business with more than 200 employees, Charitable Foundations, Civic Organizations, Science Centers/Museums/Libraries, and Youth Serving Organizations (Faith Based organizations, Parent/Neighborhood organizations, Military, and Government

organizations were not included because of the absence of respondents from those organization types). For example, if 4+ year Colleges reported informal ties with Business with more than 200 employees, Charitable Foundations and Science Centers/Museums/Libraries, but not with the other Business and Nonprofit organization types, then the formal network inter-sector density for 4+ year Colleges would be 3 out of 8 or a density of 0.38.

Determining Structural Social Capital

The metrics of degree and betweenness centrality of each of the organization types represented by the respondents of the survey were utilized to measure structural SC. Degree centrality is a measure of the number of ties an actor has in the network and betweenness centrality is a metric based on how well an actor is connected to otherwise unconnected actors and holds an intermediary position between them. Using the adjacency matrix for the informal network, the degree centrality and betweenness centrality metrics were calculated using NodeXL (Smith, Ceni, Milic-Frayling, Shneiderman, Mendes Rodrigues, Leskovec, & Dunne, 2010). The metrics for each individual was then converted to a scoring system where the actor with the highest degree metric was given a degree score of 1, the actor with the next highest degree metric was given a degree score of 2, and so on. This scoring conversion was also completed for betweenness centrality metrics. Once each actor had a degree score and betweenness score, they were added together to determine the combined centrality score. Since the study utilized a small population, there were repeat degree centrality metrics. Ultimately, this study employed a scoring conversion and not a ranking system; therefore, these ties were conserved and several organization types received the same degree score, and then the scoring sequence continued with the next number. This process was then repeated for the formal network using Level 2 interactions rather than Level 1 interactions.

Results and Analysis

Population Demographics

There were 86 total surveys used in this analysis and respondents self-selected organization types to which they belonged. Figure 1 represents the number of respondents per organization type and Figure 2 represents the percentage of each stakeholder category represented by the respondents. The majority of respondents belonged to the Academic stakeholder category at 50% with the 4+ Year College organization type, having the most respondents at 27. The number of respondents in the 4+ year College organization type alone makes up 1/3 of the respondents of the entire survey. This large number of representatives from this organization type shows a strong engagement level from UNO.

The second most represented stakeholder category was Nonprofit, with 33% of the respondents. Within this category, Youth Serving Organizations had the most respondents with 10. The Business stakeholder category had the third largest representation with 15% of the participants who elected to complete the survey. Within this category, businesses with less than 50 employees represented the largest organization type with 8 respondents. There were no representatives who completed the survey within the following categories: Career or Technical Training, Parent/Neighborhood Organizations, Military, and Government.

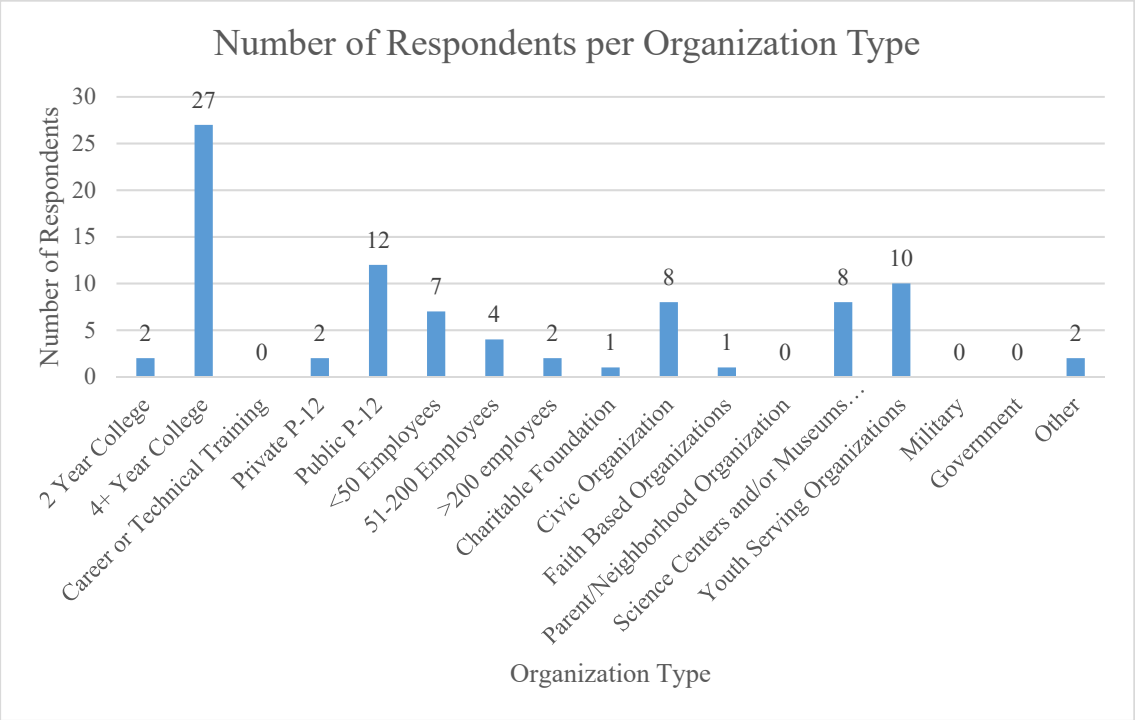

FIGURE 1. Percentage of respondents per organization type

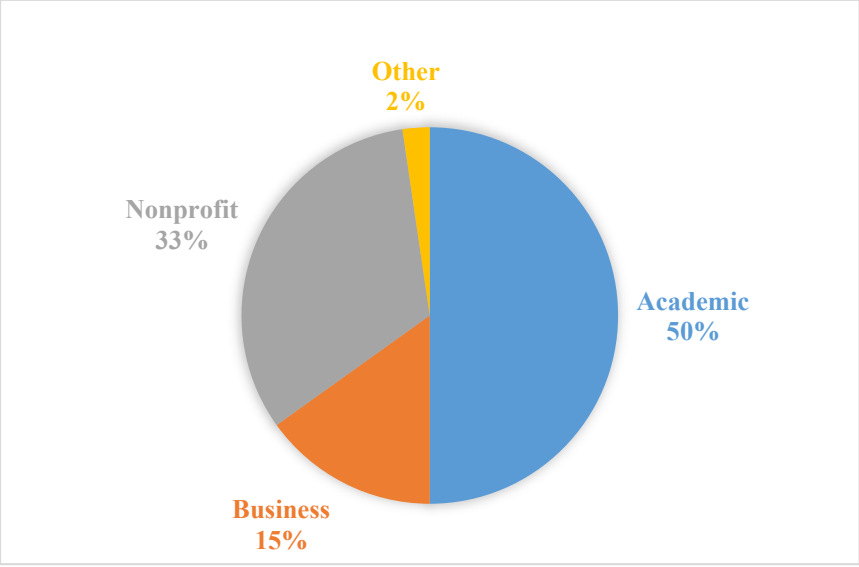

FIGURE 2. Percentage of respondents per stakeholder category

Relational Social Capital: Density

In order to determine relational SC, an adjacency matrix was initially developed that identified which ties were present. The data were used to identify formal and informal networks within the OSE based on the level of interaction actor one reported to have with actor two. Table 3 shows the adjacency matrix for the informal network where actor one is represented by the organization types in column 1 and actor 2 is represented by the organization types in row 1. When examining 4+ year Colleges (represented by 4yr), on average, they reported informal interactions with the following organization types: Two Year Institutions, Private P-12 Schools, Businesses with less than 50 Employees, Charitable Foundations, Civic Organizations, Faith Based Organizations, Science Centers/Museums/Libraries, and Youth Serving Organizations.

TABLE 3. Informal network adjacency matrix

	OSE Organization Types											
	2yr	4yr	Prv P12	Pub P12	<50	51-200	> 200	CF	CO	FBO	SCML	YSO
2yr	0	0	0	0	1	0	1	0	1	1	1	1
4yr	1	0	1	0	1	0	0	1	1	1	1	1
PrvP12	1	0	1	0	1	1	1	1	1	1	0	1
PubP12	1	0	0	1	1	1	1	0	1	1	1	1
<50	1	1	1	0	0	1	1	1	1	1	1	0
51-200	1	1	1	1	1	0	0	1	0	1	1	1
>200	1	1	1	0	1	1	1	1	1	1	0	0
CF	1	1	1	1	1	1	1	1	1	0	0	0
CO	1	0	0	1	1	1	1	1	1	1	1	1
FBO	1	0	0	0	1	0	0	0	0	0	1	0
SCML	1	0	0	0	0	1	1	0	0	1	0	0
YSO	0	0	0	1	0	1	0	0	0	1	0	0

Figure 3 is the sociogram of the informal network and was produced through the Excel add-in NodeXL (Smith, et al., 2010). The actors (OSE organization types) were represented as the nodes and the reported relationships were the arcs (arrows). It should be noted that this is a directed graph, meaning that the arrows represent the "direction" of the interaction from actor 1 to actor 2. This means that there are unreciprocated ties represented in the graph, for example, there is a tie present between 4yr and CO even though CO did not report an informal relationship

on average with the 4+ year Colleges organization type. The organization types' nodes were represented by certain shapes and colors: Academic stakeholder category nodes were red squares; Business stakeholder category nodes were green circles; and Nonprofit stakeholder category nodes were blue triangles. This represented the organization types and their relative positions to one another based on their reported relationships. Refer to Table 1 for a list of the organization type abbreviations. There were no participants within the organization types of Career or Technical Training, Parent/Neighborhood Organizations, and Military, thus they are absent from the sociogram. The organization type of "Other" is also absent since it is a broad category for any respondents who felt they did not belong to any of the organization types listed.

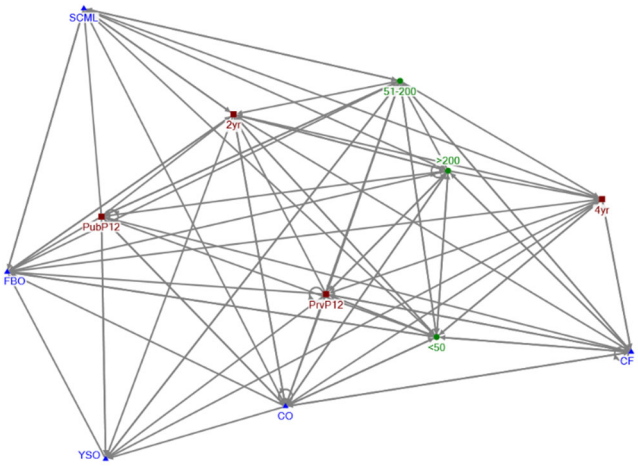

FIGURE 3. Sociogram of informal network

Table 4 shows the adjacency matrix for the formal network where actor one is represented by the organization types in column 1 and actor 2 is represented by the organization types in row 1. When examining 4+ year Colleges (represented by 4yr), on average, they reported formal interactions with the following organization types: 4+ year Colleges and Public P-12 Schools.

TABLE 4. Formal network adjacency matrix

OSE Organization Types												
	2yr	4yr	Prv P12	Pub P12	<50	51-200	> 200	CF	CO	FBO	SCML	YSO
2yr	1	1	1	1	0	1	0	1	0	0	0	0
4yr	0	1	0	1	0	0	0	0	0	0	0	0
PrvP12	0	1	0	1	0	0	0	0	0	0	1	0
PubP12	0	1	1	0	0	0	0	1	0	0	0	0
<50	0	0	0	1	1	0	0	0	0	0	0	1
51-200	0	0	0	0	0	1	1	0	1	0	0	0
>200	0	0	0	0	0	0	0	0	0	0	0	0
CF	0	0	0	0	0	0	0	0	0	0	1	1
CO	0	1	1	0	0	0	0	0	0	0	0	0
FBO	0	1	1	1	0	0	0	1	1	1	0	1
SCML	0	1	1	1	1	0	0	1	1	0	1	1
YSO	1	1	1	0	1	0	0	1	1	0	1	1

Figure 4 shows the sociogram of the informal network and was produced through the Excel add-in NodeXL (Smith, et al., 2010) and follows the same parameters as previously described for the sociogram in Figure 3.

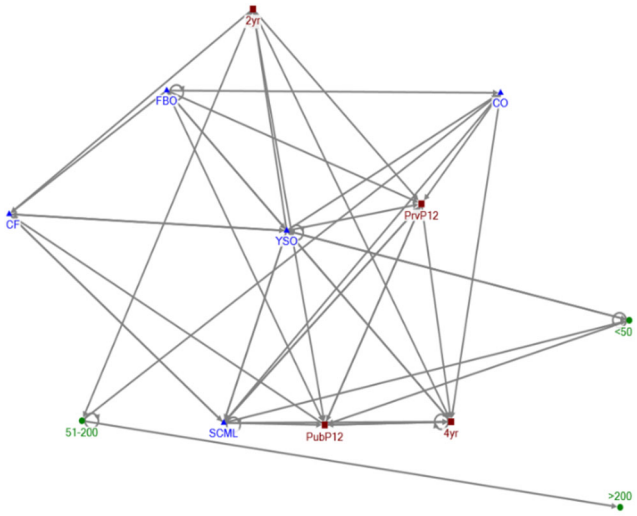

FIGURE 4. Sociogram of formal network

Once the interactions were identified, the relational SC of the organization types were calculated using NodeXL (Smith, et al., 2010) and were determined by the density of each organization type's intra-sector and inter-sector ties for both network types, informal and formal (refer to Table 1 for each organization type's sector). The density of an actor's network is the degree to which the possible number of ties actually occur. If all possible ties occurred, the density would be 1, conversely, if none of the possible ties occurred, the density would be 0. This data is represented in Table 5.

TABLE 5. Intra-sector and inter-sector density by organization type

Organization Type	Intra-sector Informal Network Density	Inter-sector Informal Network Density	Intra-sector Formal Network Density	Inter-sector Formal Network Density
2 Yr	0.00	0.75	1.00	0.25
4+ Yr	0.50	0.75	0.50	0.00
Prv P12	0.50	0.88	0.50	0.12
Pub P12	0.50	0.88	0.50	0.12
Bus <50	0.67	0.78	0.33	0.22
Bus 51-200	0.33	0.78	0.67	0.11
Bus >200	1.00	0.67	0.00	0.00
CF	0.40	1.00	0.40	0.00
CO	1.00	0.71	0.00	0.29
FBO	0.20	0.29	0.80	0.43
SCML	0.20	0.43	0.80	0.57
YSO	0.20	0.29	0.80	0.57

H1. Within the informal network, the relational SC of 4+ year Colleges (UNO) is lower for intra-sector ties rather than inter-sector ties through the demonstration of network density.

The intra-sector relational SC of 4+ year Colleges within the informal network was 0.50, which means that 50% of the possible ties it could have with other Academic organizations were at the informal level. The inter-sector relational SC of 4+ year Colleges was 0.75, which means that 75% of the possible ties it could have with Business and Nonprofit organizations were at the informal level. This means that 4+ year Colleges possessed relatively more informal ties with organization types outside of its sector than within its sector as predicted by H1.

In addition, when looking at the informal network intra- and inter-sector ties of the organization types that belong to the Business sector, this pattern persisted. The organization types in the Business sector all show a lower intra-sector relational SC compared to their inter-sector

relational SC in the informal network. This pattern also persisted for the nonprofit organization types, except for Charitable Organizations.

H2: Within the formal network, the relational SC of 4+ year Colleges (UNO) is greater for inter-sector ties rather than intra-sector ties through the demonstration of network density

The intra-sector relational SC of 4+ year Colleges within the formal network was 0.50, which means that 50% of the possible ties it could have with other Academic organizations were at the formal level. The inter-sector relational SC of 4+ year Colleges is 0.00, which means that 0% of the possible ties it could have with Business and Nonprofit organizations were at the formal level. This means that 4+ year Colleges possess relatively more formal ties with organization types within its sector than without its sector, on average there were no formal ties reported between individuals from 4+ year Colleges types and any Business or Nonprofit organization types as predicted by H2.

In addition, when looking at the formal network intra- and inter-sector ties of the organization types that belong to the Business sector, this pattern persisted. The organization types in the Business sector all show a greater intra-sector relational SC compared to their inter-sector relational SC in the formal network, except for the organization type of Businesses with greater than 200 employees, which on average reported no intra- or inter-sector formal ties. This pattern also persisted for the nonprofit organization types, except for Charitable Organizations.

In terms of collaboration, the data supported the notion that relational SC is based on the history of interactions of the actors within a network and that on average, individuals from organization types that belong to similar sectors, such as Academic, Business, and Nonprofit, tend to bring with them formal ties with other individuals that belong to the same sector. The data also supported the notion that the individuals within a network on average will have informal ties or no ties to individuals who are in different sectors.

Structural Social Capital: Combined Centrality Score

The metrics of degree and betweenness centrality of each of the organization types represented by the respondents of the survey were utilized to measure structural SC. Degree centrality is a measure of the number of ties an actor has in the network and betweenness centrality is a metric based on how well an actor is connected to otherwise unconnected actors, and holds an intermediary position between them.

H3: Within the informal network, the 4+ year Colleges type (UNO) will possess a relatively low structural SC through the demonstration of one of the lowest combined centrality scores.

The combined centrality scores were calculated using NodeXL (Smith, et al., 2010) based on the degree and betweenness centralities for informal and formal networks, which are represented in Table 6 and 7, respectively. The top organization types with the best combined centrality scores for the informal network were Civic Organizations and Businesses with 51-200 Employees. This means that, on average, these respondents had both a large number of ties within the informal network as well as acted as intermediaries for otherwise unconnected organization types. The bottom organization types with the worst combined centrality scores were Science Centers, Museums, and Libraries, and Youth Serving Organizations.

TABLE 6. Informal network centrality metrics and scores by organization type

Organization Type	Degree Centrality	Degree Score	Betweenness Centrality	Betweenness Score	Combined Centrality Score
2 Yr	0.50	4	1.266	1	5
4+ Yr	0.67	3	1.030	2	5
Prv P12	0.75	2	0.577	6	8
Pub P12	0.75	2	0.887	3	5
Bus <50	0.75	2	0.647	5	7
Bus 51-200	0.75	2	1.266	1	3
Bus >200	0.75	2	0.647	5	7
CF	0.75	2	0.236	7	9
CO	0.83	1	1.266	1	2
FBO	0.25	6	0.831	4	10
SCML	0.33	5	0.111	8	13
YSO	0.25	6	0.236	7	13

When focusing on UNO, the organization type of 4+ Year Colleges had a combined centrality score of 5, which is the third highest score with a degree score of 3 and a betweenness score of 2 which contradicts H3. H3 was based on previous results presented from the OSE in 2016 and this demonstrates the dynamic nature of the OSE and how responses can change annually. UNO has a relatively high number of ties within the informal network, and these respondents can act as intermediaries connecting other network members. Further, UNO is in a position to foster these relationships and build upon them to generate more formal and lasting collaborations not only by developing partnerships with itself, but also by connecting organization types that aren't already connected. This also means that UNO's structural position allows it the possibility to somewhat influence the adoption rate of innovations within the OSE, as well as influence the scale to which an innovation is adopted through the informal ties it holds within the OSE.

TABLE 7. Formal network centrality metrics and scores by organization type

Organization Type	Degree Centrality	Degree Score	Betweenness Centrality	Betweenness Score	Combined Centrality Score
2 Yr	0.50	3	8.543	2	5
4+ Yr	0.17	5	1.210	8	13
Prv P12	0.25	4	1.210	8	12
Pub P12	0.25	4	3.467	5	9
Bus <50	0.25	4	0.143	10	14
Bus 51-200	0.25	4	10.250	1	5
Bus >200	0.00	6	0.00	11	17
CF	0.17	5	0.710	9	14
CO	0.17	5	8.167	3	8
FBO	0.58	2	1.126	7	9
SCML	0.67	1	3.126	6	7
YSO	0.67	1	5.050	4	5

H4: Within the formal network, the 4+ year Colleges type (UNO) will possess a relatively high structural SC through the demonstration of one of the highest combined centrality scores.

In the formal networks, the top organizations were 2-year Colleges, Businesses with 51 - 200 employees, and Youth Serving Organizations each with a combined centrality score of 5. This means that on average, these respondents had both a relatively large number of ties within the formal network as well as acted as intermediaries for otherwise unconnected organization types. The bottom organization types with the worst combined centrality scores were Businesses with less than 50 employees, Businesses with more than 200 employees and Charitable Organizations.

When focusing on UNO, the organization type of 4+ year Colleges had a combined centrality score of 13 which is one of the bottom 3 scores with a degree score of 5 and a betweenness score of 8 which contradicts H4. Again, H4 was based on data from the OSE survey in 2016. This demonstrates some of the limitations of this methodology, which will be further discussed in the conclusion. This means that UNO had a relatively low number of ties within the formal network, and these respondents typically cannot act as intermediaries connecting other network members. This reiterates the findings from the informal network because respondents could only select one interaction level, so if the majority of ties were informal, then the number of formal ties were fewer. Therefore, while UNO has some formal ties, there is room for growth within their formal network. Consequently, UNO's structural position within the formal network does not allow it to influence the scale and rate of adoption of innovations.

Conclusion

The purpose of this study was to determine how universities could use SNA to determine their structural position within MSCNs, as it is beneficial for an organization to identify their structural positions and understand the sphere of their influence of the SC and innovation within their network. Additionally, it is beneficial not only for an organization to identify and understand their own position, but to also identify others' positions within the network. This study demonstrated that SNA can be used to determine the structural positions of organization types within the OSE. Analysis was completed by averaging the interaction levels of the respondents within the organization types to determine interaction levels. This information was then used to calculate the centrality metrics of density as the metric for Relational SC and combining degree and betweenness as the metric for Structural SC. After converting these metrics to a scoring system and adding them, each organization type received a combined centrality score that identified organization types that acted as both hubs and gatekeepers.

Limitations

One of the limitations of this study was that it was based on a self-reporting survey, which allows for biases, namely social desirability bias and reference bias. Social desirability bias occurs when respondents select options because they want to seem more "popular" (West, 2014), while reference bias occurs when respondents interpret the various options differently (West, 2014). The survey used in this study did attempt to minimize reference bias by providing explanation of each interaction level. Desirability and reference biases affect all self-reporting surveys and further research needs to be conducted to determine how to minimize these threats. The data were also limited by the inconsistent spread of the number of respondents per organization type. The frequencies for those organization types that had fewer respondents were heavily influenced by only those few as compared to a larger number of responses.

This study was also limited by the network analysis, as it was based on averaging the interaction levels of the individual members of the organization types and does not represent the whole network. Also, it was not possible to represent the whole network, as surveys were completed by individuals who elected to participate. Further, utilizing whole network analysis would have been too time-intensive, as respondents would be required to select an interaction level for 86 different individuals.

Discussion

Through studying the OSE, we were able to look at the differences in various forms of SC for UNO within a growing, dynamic MSCN. Breaking the members of the network into different sectors allowed us to further examine the network through intra- and inter-sector ties. We were

also able to disaggregate the ties into two different networks based on the strength of formal and informal ties. In this study, we determined that the majority of UNO's informal network ties were with organization types outside of the Academic sector, meaning that respondents from UNO had, on average, more informal ties with individuals from Business and Nonprofit organization types than with Academic organization types. We also determined that the majority of UNO's formal network ties were with organization types inside of the Academic sector, meaning that, on average, they had more formal ties with individuals from Academic organization types than with Business or Nonprofit organization types. In fact, they only had two formal ties in the network which included Four Year Institutions and P-12 Public Schools.

In terms of the structural SC, the results from this study did not support the proposed hypotheses. UNO possessed a relatively high structural SC in the informal network and a relatively low structural SC in the formal network, which directly oppose H3 and H4. UNO had the third highest combined centrality score for the informal network, which means UNO is in a position to foster these informal relationships and encourage more meaningful collaborations. However, UNO had one of the bottom three combined centrality scores for the formal network. When looking at the two networks from this perspective, it makes sense the UNO would have a low score for the formal network because they held an influential position in the informal network and respondents can only select one level of interaction. It also demonstrates room for growth for UNO in terms of developing their informal relationships into formal relationships and helping to facilitate this growth for others within the network. These interactions can be best fostered through frequent, energetic, and genuine face-to-face interactions, resulting in increasingly more meaningful and sustainable relationships (Pentland, 2015).

When combining the results of the Relational SC and Structural SC of UNO for both networks, there are several organization types with which UNO needs to strategically form relationships. On average, individuals from UNO recorded no relationships with individuals from Business organization types with 51-200 Employees and > 200 Employees. In particular, it would be beneficial for UNO to seek out partnerships with individuals from Businesses with 51-200 Employees as they are in structural positions of hubs and gatekeepers in the formal network and, on average, UNO recorded no relationships with any individuals from this organization type. Developing partnerships with individuals from the Businesses with 51-200 Employees would be advantageous for UNO because these individuals have many formal connections and can help UNO make new connections and be involved in formal collaborations.

UNO also has many informal relationships that they can build upon, particularly in the Nonprofit sector; one organization type within the Nonprofit sector that UNO should enhance its relationship with is Youth Serving Organizations. On average, individuals in these organization types hold positions of prominence in the formal network, and individuals from UNO already

have informal relationships with these individuals, which can help facilitate a more formal collaborative relationship.

Within research concerning cross-sector partnerships, SNA is being used to analyze and manage these collaborations. The role of urban universities within these MSCNs can be informed and enhanced through the use of SNA. Universities should strive to be prominent actors by holding positions of hubs and gatekeepers within their innovative MSCNs, because while they hold content expertise, having access to diverse perspectives is vital to the generation of creativity and insight (Pentland, 2015). This creativity and insight will be beneficial for both the university and the community as a whole.

Acknowledgements

The authors of this study would like to acknowledge the following people for their contributions to this project: Drs. Neal Grandgenett, Elliott Ostler, and Sarah Edwards from UNO, Julie Sigmon, director of the Omaha STEM Ecosystem, and Dr. Elizabeth Mulkerrin from the Omaha Henry Doorly Zoo.

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Original Research

Return For Good: A Model for Impact Investing for Endowments

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Cite as: Schor, A. (2020). Return for Good: A Model for Impact Investing for Endowments. *Metrpolitan Universities*, 31(1), 24-43. DOI: 10.18060/23237

Editor: Valerie L. Holton, Ph.D.

Abstract

As the calls for responsible investing grow, universities will be asked about their endowments' investment policies regarding impact investing, wherein endowments seek opportunities that provide investment returns and social impact. A common concern for the investment committees, however, is how to incorporate impact investments without compromising the goal of maximizing asset values and the benefit to its university. This paper offers a way forward. Using standard portfolio optimization models and a broader way to consider return, this paper suggests that an endowment can still meet the goal of maximizing expected value while investing with a purpose. It also offers examples of how to incorporate impact investing opportunities throughout the traditional asset classes in an endowment's portfolio. The paper also addresses some reasons why endowments have been hesitant to incorporate impact investments. While other papers have addressed aspects of impact investing, this paper seeks to offer an accessible and holistic approach to the topic.

Keywords: responsible investing, endowments, investment policy

Introduction

The rising importance of responsible investing suggests that foundations and endowments are thinking beyond just what their portfolios can make; they are considering what their money can do. Impact investing, the responsible investing offshoot where an endowment can direct its investment assets to areas with important social impact, is emerging as the next frontier in social awareness. It is a more active step than guidelines about environmental, societal, and governance (ESG) issues or a socially responsible investing policy (SRI). ESG and SRI policies often

describe what not to do, whereas impact investing seeks investment opportunities. It goes beyond avoiding "doing bad" and tries to "do good." Endowments are, in many ways, advantageously positioned to incorporate impact investments relative to foundations and other institutions, such as public or private pension plans, yet the concept remains vexing to many university boards and their investment committees. This paper, therefore, offers a framework for endowments that wish to consider impact investing, including implementing a policy, assessing returns, and reconciling impact investing with the typical investment policy goal of maximizing risk-adjusted returns of an endowment. It also shows how to incorporate impact investing into many asset classes in the typical endowment portfolio.

A great deal of literature addresses social awareness as part of an investment policy for an endowment or foundation, including an increasing focus on institutions as anchor institutions, where a university and other institutions do more to improve the communities they occupy (Kebea, 2019). *Metropolitan Universities* journal, for example, dedicated its February 2018 issue to anchor institutions. Impact investing is more broadly discussed for foundations, with much of the literature focused on the societal benefits with some discussion of risk and return factors. Emerson (2018), for example, has written a great deal about "blended value," which considers the social and financial results of an investment. Epstein and Yuthas (2014) discuss quantifying social impact, although with an emphasis on larger-scale projects, and much of the literature focuses on large-scale investment themes, such as global health, environmental issues, and economic development. Aggarwala and Frasch (2017) address the conflict in investor mandates by considering endowments as "one big impact investor" and incorporating a simplified modern portfolio theory approach. Mission Investors Exchange (Community Foundation Field Guide to Impact Investing, 2013) and the Institute for Responsible Investing (Wood & Hoff, 2008) for example discuss the benefit to fund raising from an impact investing framework and are among organizations that have published detailed guides about where endowments can allocate money. Smith and Smith (2016) have suggested the benefits of impact investing to the endowment and to the university. Chowdhry et al. (2019) discusses how impact investing can blend with traditional investing to optimize outcomes, although, unlike this proposal, there is an implicit assumption that impact investors or "socially motivated" investors must sacrifice return. The issue may be definitional. Some investors define impact investments as any investments with below-market expected returns but having targeted social benefits. As discussed later, this paper will not use this definition, however, and indeed finds it too narrow. This paper blends these concepts into a central idea to guide those considering impact investing. It takes a holistic and accessible approach to implementing impact investing, detailing the steps required, how to consider returns, how to incorporate portfolio analysis tools, and discusses investment opportunities across of range of asset classes. It focuses on endowments, which, unlike foundations, may not have a specific social mission. This paper contends that impact investments can be considered in a typical risk-return paradigm and that smaller organizations with narrower goals and leaner staffs can participate in impact investing. It addresses the difficulty of measuring returns, drawing on previous work but seeking more precision. While addressing reasons why few endowments have

yet implemented impact investing, it also suggests that a university can do more; the paper proposes not only that a university endowment can incorporate impact investing and honor its investment policy mandate to grow its assets, but also that the university is advantageously positioned to do so to the benefit of its students and community.

SRI vs. ESG vs. impact investing

A university's concern about where it invests is not new, yet the framework for responsible investing has only emerged in the last two decades. In the 1970s and 1980s, for example, a number of endowments debated or implemented anti-apartheid policies of divestment. Yet the call to consider social outcomes clearly has grown louder in the last decade (Höchstädter & Scheck, 2015). Under the umbrella of responsible investing, one can consider a spectrum of involvement from less to more active directives. ESG, at the passive end of the continuum, has gained considerable momentum. The UN Principles of Responsible Investment, an organization launched in 2006 that offers guidelines for ESG investors, has grown from 100 signatories to more than 2,200, representing more than $80 trillion of assets (Principles For Responsible Investing, 2019). Interestingly, the organization has no specific criteria for excluding an investment; a signatory only agrees to explicitly consider ESG factors as part of its investment process. ESG investing from the perspective of an endowment is an outsourcing of responsibility. Institutions may require their own investment teams or their outside managers to incorporate ESG guidelines, but the policies have no real say on what assets these managers purchase. To that extent, it is a passive approach.

Socially responsible investing represents a more active step. SRI differs from ESG in that an organization will typically provide a list of prohibited securities or a manager will operate with the idea of explicitly excluding certain type of stocks. An endowment's prohibited names typically reflect the ethos of the university, such as banning firms involved with contraceptives, weapons manufacturing or, more recently, operating in carbon-based industries. As SRI and ESG directives often are combined, the use of SRI guidelines is unquestionably rising as well (Dawkins, 2018). Although the factors under consideration could overlap, SRI is not necessarily a subset of ESG. An SRI-focused investment policy could eliminate a company by the nature of its business while another endowment could find no fault.

Impact investing, or mission-based investing for foundations, goes further yet. The term impact investing itself is relatively new, dating only from 2007, and it still lacks a common definition (Höchstädter & Scheck, 2015). The Commonfund, an organization meeting investment needs of endowments, defines impact investing as those with "the express goal of generating and measuring mission-related economic, social or environmental change alongside financial return" (Foundations Survey, 2016). It is key that impact investments seek financial returns and furthers the social goals of the organization, especially in the context of investment policies. These investments can span the portfolio, from cash with community-banks to housing loans for low-

income residents to direct investments in impact funds to loans and equity stakes in small businesses. Impact investments, also known as mission-based investments, are different than grants, which can have no financial return, or, more accurately, a negative 100% return. Unlike ESG or SRI, impact investing is quite active; it is not an exclusion policy but an explicit policy of targeting certain investments. Emerson writes that impact investing is the "*intentional* deployment of resources across the entire capital continuum wrapped around itself, transcending the dualism of doing good and doing well." It must have an explicit goal of social benefit and financial returns (Emerson, 2018).

Despite the growing popularity of ESG, SRI, and impact investing, foundations and especially endowments have been slow to incorporate these approaches. In the Commonfund survey, only 25% of respondents have investment policy statements referring to one of these areas. For endowments, 21% of the respondents reported SRI as part of their plans, making it the largest category for those with a policy. Impact investing was by far the least popular, with only 3% of endowments reporting its use, although the scope of implementation and even how each respondent defines impact investing is unclear. Impact investing acceptance was much higher among foundations, likely reflecting the mission-based nature of foundations (Foundations Survey, 2016).

There should be no reason to expect a decline in the interest in ESG, SRI, or impact investing. Much as the anti-apartheid investment controversy started with students a generation ago, it seems logical that students or other constituents will demand the same level of accountability of their endowments in terms of social impact. As acceptance grows, an endowment without an explicit policy on responsible investing will likely need it soon. Impact investing will certainly be part of the demands. The trade journal *Pension and Investments* quoted Matt Onek, president and CEO of Mission Investors Exchange, as saying "There is no foundation CIO that isn't considering impact investing. All foundations are going to have to consider how to utilize impact investing in their portfolio" (Bradford, 2018). One should assume his view would apply to endowments at some point as well.

The investment case

Why Endowments

Endowments in general have a differentiated position compared with public plans and with many foundations in terms of their ability to incorporate impact investing. Unlike pension plans, endowments typically do not face long-term liability streams, other than modest distribution requirements, and are not subject to stringent regulations on liquidity or solvency. Like foundations, endowments are ultra-long-horizon investors. Yet endowments differ from many charitable foundations because endowments typically lack a broader social or charitable goal. A foundation can choose to wrap up its operations or change its focus at any point, but universities

are typically large forces in their communities, through employment, their role in education and, often, their physical presences. Finally, endowments bring together a range of academic and professional disciplines that can be harnessed and combined with the resources of its student body. For example, many schools have public security investment programs that include students managing endowment assets, and a smaller number have student-involved venture capital programs. The following sections suggest that many of these attributes make endowments advantageously positioned for effective impact investing.

The Portfolio Fit

Socially-motivated investment guidelines have been criticized and avoided because of the concern that they will diminish returns and, therefore, violate fiduciary duties. The Commonfund survey found 71% of respondents seeing returns from impact investing as a substantial or moderate impediment to implementation. Additionally, 37% saw concerns about fiduciary duty as a substantial or moderate impediment (Foundations Survey, 2016). Portfolio theory suggests that limiting an investment universe leads to sub-optimal risk-reward trade-offs, yet the observed impact of social policy on risk-adjusted returns is less clear in practice. While some studies have found drags on returns from ESG and SRI policies, an increasing number of studies suggest a benefit to returns (Verheyden, T., Eccles, R. G., & Feiner, A. (2016). The counter-argument to the risk of limiting the investment universe is that the companies meeting certain social criteria are better firms and, over the long term, more likely to create value. That debate is beyond the point of this paper. Suffice it to say that the issue of how ESG guidelines impact investment returns is far from settled.

The return implications of impact are more difficult to study; it is relatively new, and one cannot use publicly traded stocks to measure returns. In addition, institutions that use impact investing sleeves would not normally break out segment returns. The Global Impact Investing Network reported that among investment managers running funds that seek profitable returns, the majority earn market level returns. Those willing to accept lower returns typically end up with below-market returns, unsurprisingly (Annual Impact Investor Survey, 2018). The implication is that returns for impact investment are not inherently poor. They depend on the projects selected, as it is with all investments. What is also clear and different from ESG or SRI policies is that impact investing does not require limiting an investment universe. Impact investments can be an additional asset class that expands the universe, just as many large endowments have moved beyond traditional asset categories and into alternative asset classes.

A lack of adequate empirical data leaves a theoretical debate whether impact investments can provide adequate returns. While one could follow a model suggested by Chowdhry et al. (2019) that classifies investors are either “profit-motivated” or “socially motivated,” there is no inherent reason why one investor cannot be both. While the authors use this model to examine designing

contingent social contracts and not as a discussion about implementing impact investing, the intuition holds.

An efficient market argument would suggest that social needs exist because there are no proper private sector incentives, such as attractive returns, to address them. Such an argument ignores the fact that many impact investments are small and thus difficult to find or lacking enough scale to warrant investments from larger pools of money. As discussed below, the argument does not necessarily need to be that impact investing are the highest return investments but only that they offer attractive risk-return trade-offs and favorable correlations with other portfolio assets. In addition, as discussed later, the return calculation may not be as straightforward as with other asset decisions. As long as an endowment can choose which investments to fund and assuming it has some skill in choosing, or at least not a bias toward poor decisions, returns need not suffer. An impact investment that "does good" can also do well.

Portfolio Optimization

The decision to include impact investing can, therefore, be viewed as part of the traditional asset allocation process, which takes into account risk, return, and asset correlations. Impact investments can be extensions to existing asset classes, such as cash and fixed income where they introduce a modest change to the risk profile. In the case of equity-like impact investments they can be considered as alternative asset classes with distinct risk and return characteristics. Examples could include direct equity stakes, loans with enough risk to be considered equity-like or investments into impact funds that invest in these type of securities.

Table 1. Risk-Return Assumptions by Asset Category.

	Expected Return	*Standard Deviation (σ)*	*Comments*
Equity	9.7%	10.8%	MSCI All Country World Index - Trailing 3 years
Fixed Income	4.1%	3.5%	Barclary US Aggregate Bond/Hilgh Yield Blend -Trailing 3 years
Impact Investments Low	8.0%	5.0%	Global Impact Investing Network
Impact Investments Blend	12.5%	11.5%	Global Impact Investing Network
Imact Investments High	17.0%	18.0%	Global Impact Investing Network
Cash (Risk Free)	1.0%	0.0%	
Correlation: equity to FI		0.43	Lipper US large cap equity fund vs fixed income blend (1990-2014)
Correlation: equity to II		0.46	Cambridge Associates Global Private Equity Index vs. fixed income blend
Correlation: FI to II		0.14	Cambridge Associates Global Private Equity Index vs. fixed income blend

Fixed Income blend refers to blend of Lipper aggregate core bond fund and Lipper aggregate high yield fund. Correlation data covers 1990-2014 quarterly results.

Sources: MSCI, Global Impact Investing Network, Invesco, Morningstar

The model uses this framework and the tools of Modern Portfolio Theory (MPT). As an overview, MPT considers the risk and return characteristics of each asset as well as the correlation of their returns to all other portfolio holdings. An asset whose correlation with the other assets is less than perfect can improve the overall risk-return trade-off of a portfolio, even if the asset itself offers a less attractive risk-reward combination than other the assets. An extension of MPT is the Sharpe Ratio, which measures the risk a portfolio takes and compares it

to the additional return a portfolio generates by taking that risk; a higher Sharpe Ratio is desirable as it means an improved portfolio in terms of expected return and risk. The assumptions for each asset category are important to the analysis and subject to debate. While one scenario appears here, the larger point is that impact investing can, and should, be considered as any other investment sleeve.

The scenario starts with an endowment portfolio that has 60% of its assets in equities, 35% in bonds and 5% in cash. Table 1 details the risk, return, and correlation assumptions, which rely on the historical data noted. Note there are three scenarios for impact investing. GIIN reports returns for two type of investors: those seeking market level returns and those willing to accept below market returns. Both sets of return numbers, plus an average of the two, are used. As the portfolio shifts out of equity exposure and into an equivalent exposure of impact investments with equity like characteristics, the Sharpe Ratio improves. In other words, the inclusion of impact investments improves the risk-return tradeoff for each set of assumptions, as seen in Figures 1, 2, and 3. Depending on the assumptions for impact investing, the Sharpe Ratio peaks between 20% and 60% exposure for impact investments.

Figure 1. Sharpe Ratio with below market assumptions.

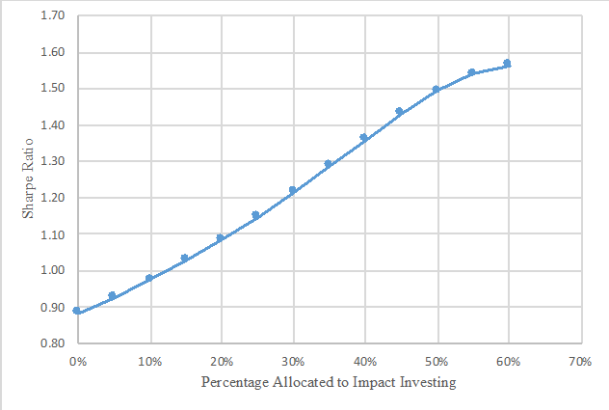


Figure 2. Sharpe Ratio with blended returns market assumptions.

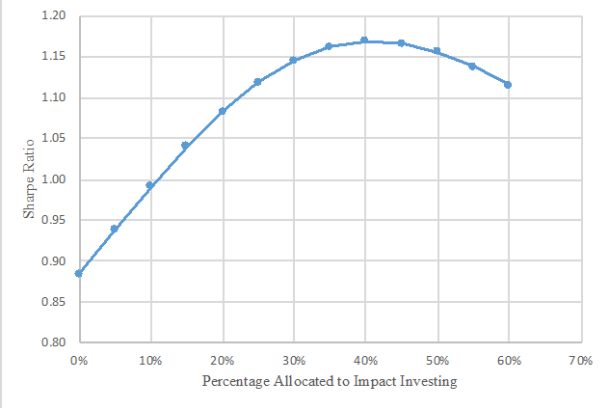
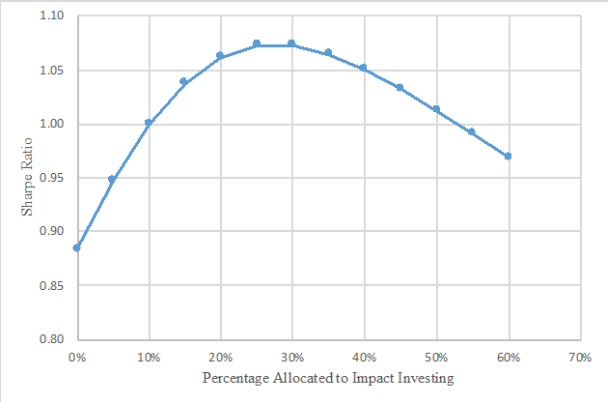


Figure 3. Sharpe Ratio with market return assumptions.



Such a high weight should not be entirely surprising given that many endowments already have meaningful exposures to alternative investment classes. The numbers also coincide with a Commonfund survey, where respondents set a target allocation to impact investing between 1% and 20%. The analysis does not consider liquidity as a risk. Endowments, however, have the advantage of being ultra-long-term investors and can tolerate low liquidity as long as the impact investing sleeve is properly sized. In summary, the analysis suggests that an investment committee with a goal to maximize return with a reasonable risk can improve its portfolio by incorporating impact investing.

The Expected Return Calculation

For an endowment, the calculation of return should be more complex than the simple internal rate of return, even if the endowment's investment policy is simply to increase value. While an endowment can expect market-level returns from impact investing, it can justify lower economic returns if it rightly considers more than direct cash in from the investment. An endowment grows when its funding and investment returns exceed its dispersals. The value of the endowment is the beginning value times the return plus new contributions less dispersal of funds or

$$EV = BV * (1 + r) - D + C$$

where EV is ending value, BV is beginning value, r is period return, D is dispersal and C contributions

Under normal circumstances, there is no real link between the investment return and the ability to attract new funds; that is, within a wide range of outcomes, investment performance should neither motivate nor discourage donors. To maximize EV, therefore, an endowment's investment committee is correct to seek to maximize *r* or, perhaps minimize D, although internal standards, university funding needs and external regulations govern dispersals. In addition, with no

expected relationship between C and r, it makes sense to consider fund raising goals independent of investment policy. On the other hand, an investment that can increase contributions, C, could have a lower return and still maximize the portfolio value. Impact investments serve that role. One could foresee an investment campaign featuring an impact investing program in the same way a new building can generate donor interest. As impact investing gains awareness, it creates a stronger tool to use for fundraising. Rising public acceptance can also lead to the risk that not addressing responsible investing slows contributions.

Note the calculations only consider the measurable monetary benefit of impact investing. One could add another component to the endowment return, which is the social benefit, S. The return calculation thus becomes:

$$EV = BV * (1 + r) - D + C + S$$

where S is a measurable social value from the investment

The social benefit could be the value to employees from low-cost housing loans, the benefits to students from a business that offers jobs, say, or any number of social goods provided by many charitable organizations. Naturally, explicit estimates of S are imprecise, but the idea remains that impact investing can pull more levers in raising the value of an endowment. Considering the value of S could also improve the ability to raise contributions, C.

Calculating S and C

Measuring C, or additional contributions, is subjective but easier than quantifying S. Many development professionals would attest that raising assets for a specific cause or project offers many more opportunities for success than merely general fundraising. In a publication by the Mission Investment Exchange, two foundation executives write that donors are "intrigued" by the ability to get a return and then "recycle charitable dollars and achieve a financial return as well as a social, economic and/or environmental return." In addition, they write, "By educating the broader donor community about opportunities for impact investing, the community foundation will be positioned more prominently and favorably to a broader audience of perspective donors – next generation and entrepreneurs especially – who believe in the power of market discipline in community investments" (*Community Foundation Field Guide to Impact Investing, 2003*). Smith and Smith (2016) consider SRI as an extension of a university's brand effect and as a signal; the same logic could apply to impact investing. A university's impact in the community should be seen as its brand. Impact means how it educates students but also, one could argue, how it improves the community that the students occupy or will soon enter. An

endowment seeking to raise money can ask on behalf of its students alone or can ask on behalf of the community and its students. The second message might be more compelling to donors.

Table 2. Adjusted Return incorporating additional contributions.

Actual Return	Donor Matching Percentage	Adjusted Return	Value of C
10%	10%	11%	1%
10%	20%	12%	2%
10%	30%	13%	3%
10%	40%	14%	4%
10%	50%	15%	5%
10%	60%	16%	6%
10%	70%	17%	7%
10%	80%	18%	8%
10%	90%	19%	9%
10%	100%	20%	10%

The impact of additional contributions is easier to measure and incorporate into a return analysis, especially if the donations are explicitly tied to a program. An incremental donation increases the return by the percentage that the donation comprises of the endowment's investment, as shown in Table 2. For example, a matching grant, where a donor co-invests at the same level as the endowment, essentially doubles the return on investment of the project. An impact investment policy that draws more general donations, but is not tied to the specific investment, serves the same role. If the added donations are 5% of the endowment over five years, say, then the annualized rate of C is at least 1%, adjusted by the returns generated by reinvesting the funds elsewhere in the portfolio.

Measuring S is more elusive, although several tools exist, the most prominent the notion of social return on investment (Yates & Marra, 2017). SROI requires a way to measure the net present value of the social benefit as a percentage of the net present value of the investment, which is difficult in practice (Millar & Hall, 2013). In theory, one could look at the incremental benefit returned to the community from the investment. The success of a community business, for example, likely has an economic multiplier throughout its neighborhood. The stability of affordable housing for students and their families or for university employees benefits the university in an indirect manner. Measuring these impacts is difficult and subjective but not impossible. Yates and Marra point out issues with the measurements, including the imprecision, but also note that SROI improves comparison among competing plans and can motivate stakeholders to participate. While focusing on health care projects, Banke-Thomas, A. O.,

Madaj, B., Charles, A., & Broek, N. V. (2015) point out the need to consider the counterfactual, that is, what would have been the outcome had the project not been undertaken. While our equation considers S as a percentage return, one could overcome the fuzziness of measurement by thinking of S on a scale depending on the university's goals. A business employing students in the neighborhood might rank higher than one operating farther from the university and with less local impact. Housing might merit a higher score, for example, than transportation, and thus if projects in each area had the same returns, the endowment could favor housing. Additionally, the endowment perhaps tolerates a housing-related impact investment with a return below market levels, if it ranked housing with a higher S.

There's a risk that an over-reliance on S conflicts with a goal to maintain the infinite life of an endowment. A high value of non-financial returns could be seen as worthwhile but effectively drain the endowment, it is unlikely an endowment would embrace the value of a social return so enthusiastically that the time horizon changes. In any case, the investment policy statement can address this concern, should it arise. Epstein and Yuthas (2014) describe a scoring system for measuring the social impact, with each important criterion ranked and then compared to the financial return. Thus an endowment could assign points from job creation or student health in one project with an above average return and compare it to another potential investment with a fewer social impact points but a higher financial return. The choice between the two may not be clear but at least a model exists. GIIN introduced a measurement called the Impact Reporting and Investment Standards (IRIS), which presents criteria to validate impact, although it does not offer a specific method to quantify the impact in terms of numerical return. Similar measures have emerged as well (Epstein & Yuthas, 2014).

Eventually, and with study, it might be possible for a university to consider the social benefit more explicitly, as the United Kingdom does with its national health care system, where policies address the sensitive issue of pricing and allocating medical resources by assigning a monetary value to the expected remaining years of a person's life. Epstein and Yuthas (2014) highlight a system that measures the present value of incremental wages from a job training program and divides it by the cost of the program to quantify SROI. An extension for an endowment might be to add a coefficient to the numerator to consider the incremental return to the university from those higher wages. It is a complex and naturally imprecise measurement, to be sure, but not one that is unattainable.

Implementation framework

The mission and investment policy statement

With an intellectual framework for impact investing, the next step is developing a structure for implementation. Implementing an impact investment program is not only an endowment decision, but requires a university to consider its mission. While the endowment must tackle a

range of structural decisions, the first question for the university is broader: Who should it help? If it wants to invest with impact, where should that impact be felt? The answer starts with the university's mission statement and then feeds into the investment policy statement of its endowment. If a university wants to impact its community, then it must define that community. This section addresses these questions, but not necessarily the difficult answers, and offers some basic structural steps on implementation.

An endowment designed to provide tuition expense, for example, implicitly defines its community narrowly as students and their needs to cover school costs. However, an endowment could consider improving job prospects or training as equally valuable as tuition support. One could argue for a yet broader definition and consider the community as the neighborhoods around the institution or the neighborhoods where its students live. A religious university could consider all members of its church. An endowment could, perhaps, help its students by investing in them, potentially even including their children or their parents. Each endowment will need to customize its approach, taking into account the nature of the university and the needs of the community, once defined. The answers require deep reflection by university leadership and the endowment board and refinement of the university mission statement. The difficulty of the questions, however, does not diminish the importance of the answers.

Without a mandate to help its community, a great number of endowment investment policy statements may struggle to implement impact investing, stuck with the belief they sacrifice return to do so, this paper notwithstanding. With a clear mandate endowment can address how to consider return in terms of measuring the economic return, the social impact, and the boost to new contributions.

Process and people

Endowments must establish a process to consider impact investments, a specific plan about how decisions are made, and must address factors such as the level of due diligence, the approval process, the monitoring of existing investments, and a host of other implementation-related issues. The process is the template that an endowment holds up to an investment decision. The clearer and firmer the process, the more effective an impact investment program can be. Process depends on the people charged to implement it. Some universities have robust investment departments that are already adept at analyzing alternative investments; others will have to look for resources, either internally, externally, or both.

Many endowments without deep investment offices rely on consultants to find and evaluate managers and aid with allocation decisions. Many impact investment funds and programs have opened in recent years and manage billions of outside funds, and they offer the investment value that endowments seek when hiring other outside managers. They charge fees and lack the ability to tailor the investments to the specific goals of a university. If personnel resources are an issue or if the endowment goals are broad enough, outside managed funds are a viable option. For a

dedicated, internally-led impact investing program, it is likely that the endowment would need to identify one person or a small group, likely with some investment knowledge and the ability to garner the university resources, to lead or oversee the process. The person or group would do well to draw on the vast resources of a typical university. The endowment should consider using an advantage that many foundations and non-endowment plans do not possess: universities can tap into knowledge of its professors, alumni and, often, highly accomplished professionals on their own boards as well as the eager and low-cost workforce of its students. Here, again, the concept of social benefit and community matters. For example, many universities have an entrepreneurship class or even entrepreneurial academic program; it may make sense to include in the curriculum the evaluation and monitoring of investments in community-based entrepreneurs. Many other courses in areas such as marketing, operations, accounting, and finance would benefit from the real-world exposure brought in through impact-based investments. If the university considers the role of the endowment to help its students, and most do, albeit typically in a financial perspective, then the idea of giving students practical experience is compelling and another input to S, the social benefit.

Investment Opportunities

The opportunity for impact investing is large. The range is no different than what one sees across the spectrum of traditional investment options from high-risk, high-return, low-liquidity venture capital investments to the low-risk, low-return, high-liquidity cash, and cash equivalents. What follows is a broad overview, with general asset classes and how an endowment could include impact investments in each. Full implementation requires building out or utilizing existing legal, accounting, and compliance personnel as well as developing the process to monitor investments. The examples come from several important publications that have researched the opportunities, including the Mission Investors Exchange and the Institute for Responsible Investing. Numerous local and national organizations offer advice or can be a source of potential investments. Many of these organizations are non-profit but the endowment could build relationships with community banks or other for-profit organizations that seek investors. It is also important to collaborate with other endowments, especially as implementation becomes more widespread, to build scale and leverage resources.

In considering the following asset classes, the process starts by defining the return potential, including the values of C and S, determining the risk and the liquidity and understanding where the investment opportunity would sit within the asset allocation framework. Three key areas are:

- **Cash:** Deposits in community banks which lend locally can be more impactful than cash in national or global financial institutions. There should be little difference in yield, especially in the current low-rate environment. A step further might be to deposit cash in organizations with specific lending mandates, such as subsidizing mortgages for low-cost housing loans. Cash could also support loans to small business in low-income areas.

Institutions include community development finance institutions (CDFIs), which garner federal grants if they direct a specified percentage of business to support those who lack access to financial markets. CDFIs can take in outside, insured deposits to bolster their capital bases. Community development banks and community development credit unions can effectively use local knowledge to find opportunities in traditionally underserved communities. They too can take in outside deposits.

- **Fixed income:** Opportunities include lending for low-income and affordable housing and for community entrepreneurs unable to access traditional bank networks, perhaps because those in need do not fit a traditional profile. While the expected return, at least risk adjusted, could be lower, the ability to generate a return through a social benefit could be higher than with cash investing. Depending on the nature of the loans, these investments could offset some duration risk in traditional fixed income allocations; that is, their values may fall less if interest rates rise.
- **Equity**: Equity-like investments, such as direct investments in small business or even higher-risk loans to them, could be considered an alternative asset class. The equity-like exposure could be venture capital investments for entrepreneurs in the university community, as defined by the mission statement or investment policy statement. An endowment could use an outside-managed fund for this exposure or could harness local resources, including its faculty and students, to source ideas. Many community-based organizations and local banks help underserved entrepreneurs with loans. An endowment could use the vetting and analysis of these organizations but invest as an equity-holder, perhaps increasing the credit-worthiness and capital of the fledging business. The opportunity also exists to co-invest with other local universities with similar agendas and communities to create the ability to diversify among many opportunities.

Implementation Roadblocks

University endowments have sought out alternative investments, including hedge funds, venture capital, and real assets, in an attempt to diversify and to seek alpha. At the same time, the university community, including faculty and students, have spoken out for greater social awareness in the endowment's portfolio, if not explicitly referring to impact investing then at least addressing its key attributes. Nevertheless, the implementation by university endowments has been minimal. There are examples, such as University of Cincinnati, which invested almost $150 million or 13.6% of its endowment to finance real estate development in a Cincinnati neighborhood (Dubb, McKinley, & Howard, 2013). Other examples exist, but as noted, fewer than 3% of university endowments have an explicit impact investment policy, and one might wonder about this number given the loose definition of impact investing and the frequent conflation with socially responsible investing. Many endowments allocate funds for students to invest through university courses, which can be considered an impact investment with the social benefit of practical experience for students. These examples notwithstanding, when one moves down from SRI and ESG and consider only investments with direct benefit for the

university community, it would seem that a barrier exists between the spirit of the university community and the actions of its investment board. The barrier cannot be explained by a lack of interest in non-traditional investments or by abnormal risk-aversion. Some asset classes offer opportunities for impact investing without requiring notably higher risk tolerances. Instead, it appears that structural and behavioral factors have prevented implementation, and if not addressed, could continue to slow acceptance, despite an existing investment rationale.

Phillips and Johnson (2019) interviewed leaders of non-profit organizations and others involved in funding affordable housing and community development projects to highlight barriers in implementation. While the interviewees were not from endowments, one can infer common apprehensions. The authors found that a lack of market knowledge and the challenges of measuring social impact were among the reasons to not invest. Similarly, Emerson and Bugg-Levine (2013) highlight the lack of markets, a poor structure to access deals and, importantly, a lack of a common measure to measure social impact. The lack of a method to measure impact might be the biggest barrier. Endowments could rightly argue that their traditional investments have impact already, as their capital finances companies that create jobs and improve lives. If impact investing requires a sacrifice in returns, therefore, it belongs as part of the distribution of the endowment and not the management of its corpus. The view is not without merit, but Emerson (2018) dismisses this oft-heard quip of "all capital has an impact." He is a long-time advocate of "blended value" and argues that the lack of a perfect measure is not a reason to abandon the effort to consider social value.

Ford Foundation President Darren Walker (2017) suggested changing a prevailing attitude where an organization considered 5%, the distribution, of the portfolio in terms of social impact and the remaining 95% in terms of financial returns. He writes that "the time is right … to consider how we might start to bridge the gap between philanthropic impact and investments." This bifurcated view of a portfolio that he criticizes, however, could explain the slow adoption of impact investing, especially among endowment boards and investment staffs that lack a specific social-welfare goal. Again, without a framework to measure returns, boards may not feel comfortable moving away more traditional investment options. Other hesitations may run deeper. For example, Larry Kramer, president of the William and Flora Hewlett Foundation, suggests that impact investing is wasteful for an endowment because it blurs the line between grants and investments. Sacrificing investment returns for impact investing, he suggests, diminishes the value of future grants and thus reduces their benefits (Gunther, 2019). His views also would argue against program-related investments, an increasingly popular method of equity and loan that combine grants with financial return expectations. The then-president of Harvard University, Drew Faust, was even more emphatic in 2013 when he said, "The endowment is a resource, not an instrument to impel social or political change" (Mufson, 2019). While Faust was commenting on student and faculty requests to divest shares of companies focused on fossil fuels, his attitude might extend to impact investing. Accepting the idea of a broader return measure for impact

investing and considering them as viable portfolio options, as this paper suggests, could very well require a mindset not common in endowments, what Emerson and Buggs-Levine (2011) call the "mutant manager." A second hesitation is access to investment options, although many funds exist that cater to impact investors. While these funds have seen tremendous growth, they may not be suitable for endowments seeking local impact. The problem is also scale; a large endowment with a robust staff can best evaluate impact investments, but for efficiency it must consider large deals that can be meaningful within a portfolio. A smaller endowment can handle smaller deals but may not have the staff or investment sophistication to evaluate the prospects. One method to marry community impact and scale would be to partner with other local institutions or with many community-based institutions focused on local economic development.

Even if an endowment investment team accepts that impact investing might not require a sacrifice of returns, the issue of time horizon could be a deterrent to implementation. Most endowments, to the extent that a university plans to remain in existence, have an extraordinarily long investment horizon, excluding its annual distribution requirements. While Jaeger, et. al. (2010) speak of the multi-horizon paradigm for endowments, segmenting between current distribution needs and long-term growth of the corpus, the substantial long-horizon portion allows universities to be paid for liquidity risk that other investors could not accept. A potential conflict, however, would arise if investment decision makers at endowments do not also have long investment horizons because of their compensation plans or career goals. For example, the University of Michigan set investment staff bonuses on the rolling three-year performance relative to benchmarks and to peers (*Investment Office Incentive Plan* 2017). Linking compensation to performance is not inherently bad and quite common in the investment community. The point is not to criticize Michigan in particular but to note that incentives can influence the willingness to take on a longer-term perspective inherent in some impact investments.

It may be unfair, however, to blame the manager, who is really the messenger of the university's mission statement. Real adoption among endowments likely will start with leadership at the university to establish a goal to incorporate impact investing into its endowment and then align interests and allocate resources. The decision could stem from the perspective of a university as an anchor mission and the role of place-based investing. Emily Sladek of The Democracy Collaborative, a non-profit organization dedicated to harnessing resources for community development, writes that universities now recognize themselves as "important place-based engines that play key roles in key economies." That awareness is "the beginning of the story," she writes. "It is one thing to be an anchor institution. It is another to consciously and intentionally adopt an anchor mission, leveraging all available institutional and operational resources," states Sladek (Sladek, 2019).

Given the mandate to do so, an endowment investment team will seek out vehicles for an impact, either through CDFIs, local banks and funds, teaming with other groups with similar community goals, and many other options. The need to seek investments could lead to greater effort to measure the impact, both in contributions and social returns, to justify and monitor the money spent. Each university will have to develop its own tools, tailored to its resources and definition of community, but there will be similarities among endowments and benefits to sharing knowledge. Processes improve with feedback loops.

Conclusion

Endowments often see impact investing as a choice between increasing assets and allocating money for social good. This paper sets out to show that this tradeoff can be a false one, especially as one considers the effect on contributions and values of the social benefits to the university's community. Incorporating impact investing requires a robust policy and a thoughtful debate on the definition of the community, but it can be a powerful and, if properly measured, a fair-return strategy for a university. An endowment could undertake impact investing while remaining a prudent person, as investment policy statements and outside standards often require. It is important to distinguish impact investing from grants. Impact investments should not crowd out grants with strong social impact but negative financial returns. This paper suggests these two paths are complementary, rather than conflicting.

However, adoption has been slow and this paper suggests endowments must overcome some structural biases against impact investing to match the level of acceptance seen in foundations. While the lack of precision in measuring social impact is an important barrier, there are investment options that can still make sense. In addition, an endowment can overcome the difficulty in measuring the social benefit or the incremental contribution with a thoughtful and iterative approach based on experience. An endowment, unlike a foundation, has the additional benefit of involving its students and enhancing their knowledge. In all, the rising voices outside the endowment and the advantages within it argue for a new look at incorporating impact investing.

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METROPOLITAN Universities

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Original Research

The Development of a Service-Learning Outcomes Measurement Scale (S-LOMS)

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Cite as: Snell, R.S., & Lau, K.H. (2020). The Development of a Service-Learning Outcomes Measurement Scale (S-LOMS). *Metropolitan Universities*, 31(1), 44-77. DOI: 10.18060/23258

Editor: Valerie L. Holton, Ph.D.

Abstract

Service-learning as a transformative pedagogy has been adopted within Hong Kong's tertiary education sector for over a decade; however, the lack of a standardized and validated measurement instrument to assess its student learning outcomes has been an obstacle to its further development. The current research study, collaboratively conducted by Lingnan University, The Hong Kong Polytechnic University, Hong Kong Baptist University, and The Education University of Hong Kong, therefore aims to develop such a measurement instrument named the "Service-Learning Outcomes Measurement Scale (S-LOMS)," taking consideration of the unique features of service-learning in Hong Kong. The scale development and validation work, with exploratory factor analysis and reliability test, has thus far demonstrated that the student-perceived learning outcomes after service-learning can be measured and assessed through 56 items. These items cover 11 domains under four major categories, namely: a) knowledge application; b) personal and professional skills, including relationship and team skills, creative problem solving skills, self-reflection skills, and critical thinking skills, c) civic orientation and engagement, including sense of social responsibility, community commitment and understanding, and caring and respect, and d) self-awareness, including self-efficacy, self-understanding, and commitment to self-improvement. Several additional insights arising from the validation results are discussed.

Keywords: Hong Kong, validation, scale development, exploratory factor analysis

Overview

The rise of service-learning in tertiary education

Service-learning has been undergoing continuing development in tertiary education, since its very first establishment in the United States in 1960s when Oak Ridge Associated Universities (ORAU) and the Southern Regional Education Board (SREB) developed and popularized service-learning internships (Giles & Eyler, 1994; Ramsay, 2017). Service-learning has been introduced to tertiary education institutions around the globe, yet while it has evolved in response to diverse contexts, its core principle of connecting academic learning with meaningful service to society has remained constant. Accordingly, there is broad agreement on the definition of service-learning as "a form of experiential education in which students engage in activities that address human and community needs together with structured opportunities for reflection intentionally designed to promote student learning and development" (Jacoby, 1996). There is also broad agreement that service-learning seeks mutual empowerment through social exchange between the students and the served, through which both sides can learn and grow (Shumer, Stanton, & Giles, 2017), resulting in both academic and non-academic enhancement for students as expected outcomes. Many Hong Kong based tertiary education institutions have come to regard service-learning as potentially beneficial for student learning and development, and have incorporated it in their undergraduate curricula. The first to do so was Lingnan University, which introduced service-learning in 2004, and was also the first university in Asia to institutionalize service-learning by establishing an Office of Service-Learning in 2006 (Ma & Chan, 2013).

A research gap regarding student learning outcomes from service-learning in Hong Kong

Although service-learning has been adopted in Hong Kong for over a decade, research on its impacts there and in other Chinese contexts is limited (Shek & Chan, 2013). In order to further develop service-learning pedagogy in Hong Kong, the benefits for students, if any, of engagement in service-learning, especially evidence about perceived learning outcomes, should be clearly demonstrated to schools and instructors. Although a considerable amount of research documenting student learning outcomes from service-learning has accumulated in the west (e.g. Astin et al., 2000; Celio et al., 2011; Conway et al., 2009; Eyler & Giles, 1999; Novak et al., 2007; Warren, 2012; Yorio & Ye, 2012), there are relatively few scholarly publications about developmental outcomes of service-learning in Asia, including Hong Kong, a gap that needs to be filled (Xing & Ma, 2010).

This research gap can be partly attributed to the lack of locally salient and reliable measurement instruments for assessing the effectiveness of service-learning in Hong Kong, as explained in a later section. Two research approaches have thus far been adopted, both of which have both fallen short of filling the research gap. First, some studies have adopted qualitative methods,

such as focus groups and interviews (e.g. Shek & Chan, 2013; Snell et al., 2015a, 2015b, 2019). Although these approaches have offered deep and comprehensive insights into student experiences, as well as design and implementation issues during service-learning, it is difficult to compare qualitative findings across different studies (Toncar et al., 2006). Second, while other studies have used quantitative surveys for assessing learning outcomes, these have adopted or translated measurement scales that were developed in the west (e.g. Lo et al., 2016; Ngai, 2006, 2009; Siu et al., 2013), and/or have focused on outcome domains that reflect researcher interests rather than local institutional priorities.

This study, therefore, seeks to fill the research gap by developing a standardized and validated measurement instrument named "Service-Learning Outcomes Measurement Scale (S-LOMS)" for assessing the perceived learning outcomes of students engaged in service-learning in Hong Kong, which addresses outcome domains that match local institutional priorities, and which can generate results that are comparable across studies in Hong Kong and potentially more broadly in Asia. An additional aim of the research is to reduce error that might otherwise arise from using items and scales that have been developed in the west, and which may contain slang, idioms, and allusions that are not fully understood by local students. We believe that a customized measurement instrument can serve as a reliable means for schools and instructors to evaluate service-learning pedagogy, while also generating a robust body of evidence regarding the local educational benefits of service-learning, which, if favorable, could attract newcomers to adopt service-learning pedagogy.

The next section will develop a preliminary conceptual framework for analyzing student developmental outcomes arising from service-learning, based on a review of western literature. This is followed by a section on how service-learning has been customized to address local needs in Hong Kong, in the context of (a) broader educational reforms and (b) cultural and institutional values that appear to be more closely aligned with Confucian ideals than with western principles of liberation and democracy. These review sections are followed by a synthesis, in which we present a modified, culture-sensitive conceptual framework for analyzing student developmental outcomes arising from service-learning in Hong Kong. We then go on to explain the methods adopted for the development of a new measurement instrument for assessing student-learning outcomes, including how items and scales were created and validated, and how the associated statistical analysis was conducted. This methods section is followed by one that reports our results, and the paper concludes a discussion of the insights from our findings and analysis.

Literature Review

Preliminary conceptual framework for students' developmental outcomes from service-learning

The developmental outcomes for students that arise from service-learning have been studied extensively in the west, and numerous outcome lists have been proposed. For example, stating that service-learning "aims to connect the personal and intellectual, to help students acquire knowledge that is useful in understanding the world, (and) build critical thinking capacities" (Eyler & Giles, 1999) identified learning outcomes within four domains. These domains are: 1) understanding and applying knowledge; 2) personal and interpersonal development; 3) cognitive development, including critical thinking, engagement curiosity, reflective practice, and perspective transformation; and 4) citizenship. The above framework broadly matches other conceptualizations, such as one by Driscoll et al. (1996), and has also been reflected in subsequent analyses by Eyler et al. (2001), Ash & Clayton (2009), and Felten & Clayton (2011).

We consider, nonetheless, that the Eyler & Giles (1999) four-domain framework can be condensed into three by subsuming personal and interpersonal development, such as team and interpersonal skills, together with cognitive development, such as critical thinking, under the broader domain of personal growth. Table 1, as below, locates prior conceptual frameworks for student learning outcomes within the three major domains of academic enhancement, personal growth, and civic learning, which concurs with the model proposed by Felten and Clayton (2011).

Table 1. A preliminary conceptual framework for student learning outcomes from service-learning

Researchers	Academic Enhancement	Personal Growth	Civic Learning
Eyler and Giles (1999)	Understanding and applying knowledge	Personal and Interpersonal development Critical thinking Reflective practice Perspective transformation Engagement, curiosity	Citizenship
Driscoll et al. (1996)	Academic achievement	Personal development Communication skills Career choices Self-awareness Autonomy/ independence Sense of ownership	Awareness of community Involvement with community Commitment to service Sensitivity to diversity
Eyler et al. (2001)	Enhanced academic results	Interpersonal development Ability to work with others	Moral development Reduced stereotyping and prejudice

	Knowledge application	Leadership and communication skills Problem analysis Critical thinking skills Personal efficacy Personal identity Career development Spiritual growth	Enhanced cultural & racial understanding Sense of social responsibility Citizenship skills Commitment to service
Ash and Clayton (2009)	Academic enhancement	Personal growth	Civic learning
Felten & Clayton (2011)	Academic knowledge/ skills/ dispositions	Personal growth Teamwork Critical thinking skills Intercultural competence	Civic learning

The tripartite categorization in Table 1 is consistent with Eyler's (2010) review, which confirmed that service-learning had favorable impacts on college students in terms of academic enhancement, personal growth, and outcomes relating to civic engagement. A large body of prior research accordingly indicates that service-learning can enhance students' learning within the three broad domains. Relevant sources include: Astin & Sax (1998), Celio et al. (2011), Conway et al. (2009), Driscoll et al. (1996), Felten & Clayton (2011), Lundy (2007), Novak et al. (2007), Prentice (2007), Richard et al. (2017), Rama (1998), Shek & Chan (2013), Simon & Cleary (2006); Snell et al. (2015a), Warren (2012), Yorio & Ye (2012). While we consider that these three domains capture most of the salient outcomes, space constraints mitigate providing a detailed mapping of all prior research.

Local adaptation of service-learning to Hong Kong

Since the institutionalization of service-learning in Asia (including Hong Kong) has been relatively recent (Permaul, 2010), it is not as mature as in the United States (Ma & Lo, 2016). As mentioned above, the tertiary education institutions in Hong Kong did not begin to incorporate service-learning within their curricula until the 21st century. The development of service-learning in Hong Kong (see Ma, 2018) cannot be fully understood without taking local education policy reforms and associated institutional ideologies into account.

The context of broader educational reforms. Regarding the educational policy reforms, three milestones facilitated the emergence of service-learning. First, in 2001 a HKSAR government report critically reviewed Hong Kong's school curriculum and set out a vision about equipping students with 21st century skills and abilities, with the cultivation of whole-person development and lifelong learning as core educational goals (Education and Manpower Bureau, 2001). This

report foreshadowed curriculum reforms of secondary and tertiary education at the beginning of 21st century. The new emphasis on whole-person development provided a supportive backdrop for the development of service-learning in Hong Kong (Xing & Ma, 2010).

Second, in 2010, the University Grants Committee (UGC), the organization responsible for guiding the HKSAR government on the funding and strategic development of all public-funded universities in Hong Kong, reiterated its overall mission for universities in Hong Kong. This mission, which is well-matched with the aims of service-learning, sought to develop students into productive and socially responsible citizens by equipping them with "a greater sense of the wider world and the moral or ethical tools with which they can contribute to that world. The experience of university (life) should firmly root an individual's sense of personal and social responsibility" (University Grants Committee, 2010).

Third, wide-ranging structural reforms involved changing from a three-year to a four-year system for undergraduate degree programmes by all publicly-funded universities in Hong Kong, beginning in 2012. The adoption of a four-year programme reflected the purpose of providing students with a broader knowledge base to complement more specialized instruction (Education and Manpower Bureau, 2005), and opened up opportunities to include general education as an integral part of the undergraduate curriculum (Freake, 2013).

In conjunction with the 2012 reforms, many Hong Kong universities launched service-learning programs, reflecting their own needs and circumstances (Ma, 2018). The Hong Kong Polytechnic University, for example, seized on the introduction of an extra year in the undergraduate program to stipulate the incorporation of a service-learning component in their graduation requirement (Chan & Ngai, 2014; Shek et al. 2015).

Orientation by Confucian ideologies. The ideological context for service-learning in Asian societies such as Hong Kong appears to be substantially different from that of the west, where service-learning has been based on John Dewey's ideas about the role of critical reflection on social action as a vehicle for building democratic values and awareness of human rights (Giles & Elyer, 1994; Saltmarsh, 2005). Although service-learning may be considered to be an aspect of civic education, Confucian ideologies underpin educational policies in Asian societies, resulting in a relatively depoliticised approach to such education, by emphasising spirituality, self-cultivation, harmonious relationships, and preservation of the status quo (Lee, 2004).

Thus, in Hong Kong, civic education as a whole has emphasised personal and moral development rather than democracy and human rights (Leung & Yuen, 2012). Accordingly, we observe that, in alignment with this overall approach, the stated objectives and expected learning outcomes of service-learning programs in Hong Kong tertiary education institutions have emphasised knowledge application and practical skills rather than proactive civic engagement or democratic ideals, as illustrated in Table 2 below. By contrast, the service-learning course design

handbook (Howard, 2001) developed by the University of Michigan as a reference point for other United States universities, has framed "purposeful civic learning" as an essential characteristic of academic service-learning. This handbook states that "the addition of relevant and meaningful service with the community must not only serve the community and enhance academic learning in the course, but also directly and intentionally prepare students for active civic participation in a diverse democratic society" (Howard, 2001).

Table 2. Main Objectives and Expected Learning Outcomes for Major Hong Kong Higher Education Institutions Adopting Service-Learning

University	Objectives	Expected Learning Outcomes
Chung Chi College, the Chinese University of Hong Kong (http://www.news.ccc.cuhk.edu.hk/slp/index_e.php)	1. To enhance students' personal growth and prepare them to be informed, responsible citizens and civic leaders, through instilling the set of core qualities including values, knowledge, skills, critical and reflective thinking, and commitment, etc. 2. To benefit society by bringing in high-level expertise and resources from the tertiary education sector that address community needs. 3. To contribute to academic research on service-learning as a subject of study, and its application and impacts.	1. Apply their (discipline) knowledge and generic skills to address community needs; 2. Acquire skills to work efficiently and effectively with others; 3. Evaluate one's own strengths and limitations, and identify areas that need further development for personal growth; 4. Develop a sense of citizenship and community service including the cultivation of social responsibility, civic engagement, attention and action for the needy; 5. Develop information literacy and foundations for lifelong learning; 6. Demonstrate active and rational collaboration in group discussion; 7. Demonstrate personal and social soft skills, and the ability to work in interdisciplinary teams;
City University of Hong Kong (CityU) (http://www.cityu.edu.hk/caio/oss/)	1. To enhance students' understanding of the work environment and their long-term personal and professional development. 2. To develop students' important life and job skills required by future employers so as to enhance their lifelong employability. 3. To facilitate, strengthen, and expand students' learning through the integration of service-learning into real life work experience. 4. To elevate the overall standard of students in terms of personal, career, and professional accomplishments through meaningful campus work and systematic feedback provided by recruiting units. 5. To provide a reliable pool of resources support to departments and individuals who have a high demand for manpower due to rapid development of the University. 6. To provide opportunities for faculty, students, and administrative staff to develop sense of belonging towards the CityU community.	1. Personal and professional development 2. Students' important life and job skills 3. To facilitate, strengthen, and expand students' learning

Hong Kong Baptist University (https://cisl.hkbu.edu.hk/about-cisl/SL-definition)	1. Service projects anchored in a specific curriculum are developed to contribute to the common good of humankind in the effort to enrich students' academic learning and personal growth 2. Structured service-learning opportunities are built into academic curricula directly, allowing students to reflect better upon their experience as citizens and whole persons and to conceptualize and enact effective relationships between their academic learning and community service locally, nationally, and globally.	1. Apply their cumulative learning gained from their discipline knowledge/course and beyond to address specific community issues by means of innovation; 2. Demonstrate deep self-understanding, empathy and caring for others and great sense of commitment to the common good of humankind; 3. Develop a habit of critical reflection for life-long and life-wide learning, personal and professional development, and 4. Identify ways to strengthen generic competencies and professional skills.
Lingnan University (SLRS Model Manual, from Chan et al., 2006)	1. Offers a real-life opportunity for students to apply the knowledge and skills that they have gained from course work into the community, and to integrate useful knowledge into practice. 2. Students' personal growth, self-fulfillment and satisfaction are expected to be enhanced after joining the service-learning program.	1. Subject-related knowledge 2. Communication skills 3. Organizational skills 4. Social competence 5. Problem-solving skills 6. Research skills
The Polytechnic University of Hong Kong (PolyU) (https://www.polyu.edu.hk/osl/index.php?option=com_content&view=article&id=88&Itemid=218)	1. Preparing students to become civic-minded professionals with a heart to serve. 2. It is expected that service-learning at PolyU will not only enhance students' sense of civic responsibility and engagement, but also benefit the community at large. It emphasizes learning through engagement in services. 3. As a pedagogy, service-learning gives academic learning, service experience and reflection central roles in learning.	1. Apply academic knowledge and skills into meaningful community service 2. Have structured processes for students to reflect critically on academic content and civic engagement, so as to consolidate their academic and ethical development
The Education University of Hong Kong (https://www.eduhk.hk/re/modules/content/item.php?categoryid=42&itemid=22)	1. Extend students' learning beyond the traditional classroom-based curriculum while satisfying the quality assurance criteria.	1. Leadership skills, communication skills, interpersonal skills, organizational skills, influencing skills, problem-solving skills, and creativity
The University of Hong Kong (in the form of experiential learning) (https://tl.hku.hk/wp-content/uploads/2014/01/Gallant-Ho-Leaflet-2013-2.pdf)	1. The learning objectives are achieved through consistent faculty mentoring and critical reflection of the participation process. Students will see the integration of theory and practice and develop its own interpretation and holistic understanding of the topics.	1. It is a kind of learning that requires students to tackle real-life issues and problems by drawing on theoretical knowledge that they have learnt in the formal curriculum. 2. Dealing with real-life problems requires students to integrate knowledge within and across disciplines, to go beyond technical considerations, and to take into account social and human factors that come into play.

A review of definitions of civic engagement by Daynes and Wygant (2003) provides a useful reference point. They identified a spectrum of definitions, ranging from those that "work from social justice or progressive models" through those that focus on political action inside or outside the electoral system, including protests, to those assuming non-political community-based work or the expression of individual freedom. The content of Table 2 suggests that service-learning programs in Hong Kong tend to be oriented more toward non-political community-based work than toward political involvement and social justice.

Confucian values also appear to have shaped the design and implementation of service-learning at the course level in Hong Kong. This metropolis, with its strong Confucian influence, has been regarded as a culture with large power distance, where those members who have relatively little power tend to accept hierarchical differentiation and inequalities in relationships, and low uncertainty avoidance, the extent to which those members prefer structure, strong direction and stability over ambiguity, (Hofstede, 1983). Such cultural characteristics have led Hong Kong to adopt authoritarian family-style as an implicit model of organization that follows the Chinese administration principle of governance by man over and above rule of law (Hofstede, 1980). Accordingly, in educational settings, we observe that Chinese students in Hong Kong tend to expect that their instructors will play a major role in structuring and guiding their service-learning projects, an expectation that is consistent with previous research findings that Asian students prefer their courses to involve tight structure and close instructor guidance (e.g. Chan, 1999; Rodrigues, 2005). By contrast, in western contexts, service-learning programs are often framed as opportunities to learn by discovery about participatory democracy, and to build students' ability to take action to change communities with the explicit aim of furthering social justice (Battistoni, 1997; Einfeld & Collins, 2008; Mitchell, 2008; Wade, 1997).

Besides manifesting a relative lack of emphasis on social justice and democracy, Table 2 also sheds light on another characteristic of service-learning in Hong Kong, which focuses more on the development of practical and job skills. This emphasis is aligned with traditional expectations in Hong Kong (Kennedy, 2002) and in Chinese cultures in general (Lee, 1996) that academic success is a pathway to job success and upward social mobility (Shek & Chan, 2013).

Synthesis: A modified conceptual framework for the Hong Kong context

Our review of the literature led us to create a modified conceptual framework that formed the basis for the measurement instrument, S-LOMS, which we subsequently developed. This new framework (see Table 3) comprises 15 domains that are subsumed under the four broad categories of knowledge application, personal and professional skills, civic orientation and engagement, and self-awareness. There are five main differences from the preliminary model.

First, reflecting Hong Kong's pragmatic orientation, we relabeled the original personal growth category as personal and professional skills. Second, we included the domain of self-reflection

skills within this broader category to acknowledge the centrality of self-cultivation in Confucian educational philosophy (Lee, 2004). This inclusion is also supported by prior research that has established that reflection plays a key role for students in deriving substantial educational and developmental outcomes from engagement in service-learning (Bringle & Hatcher, 1999; Eyler & Giles, 1999; Godfrey et al., 2005; Hatcher et al., 2004; Jacoby, 1996).

Third, we made self-awareness the basis of a fresh category, subsuming the domains of self-understanding, self-esteem, and commitment to self-improvement, once again acknowledging the importance of Confucian self-cultivation (Lee, 2004). Fourth, the domains that are subsumed under our category of civic orientation and engagement reflect the relatively depoliticized approach to civic education in Hong Kong (Leung & Yuen, 2012), with its muted concern for participatory democracy.

Fifth, we replaced the category label of academic enhancement and renamed the category as knowledge application. In line with this, we dropped subject knowledge from this category, on the grounds that the graded assignments within a course should suffice for systematically measuring how much students gain in terms of subject knowledge.

Table 3. The Modified Conceptual Framework Specific to Hong Kong Context

Conceptual Category	**Knowledge Application**	**Personal and Professional Skills**	**Civic Orientation and Engagement**	**Self-awareness**
Learning Outcome Domain	1. Knowledge application	2. Relationship skills	8. Sense of social responsibility	13. Self-understanding
		3. Team skills	9. Commitment to social betterment	14. Commitment to Self-improvement
		4. Problem-solving skills	10. Understanding community	15. Self-esteem
		5. Critical-thinking skills	11. Respecting diversity	
		6. Self-reflection skills	12. Empathy and caring for others	
		7. Creativity		

Methods

Development strategies

The scale development procedures adopted for the new instrument followed the standard approach employed in academic research (e.g. Boateng et al., 2018; DeVellis, 2003). We began with the identification of constructs and domains through literature reviews, as demonstrated in the previous sections. The subsequent item development and scale validation procedures are described below in this methods section and in the results section that follows. Our objective was to establish a validated measurement instrument, i.e. S-LOMS, that fulfilled four criteria: a) applicable in the cultural and institutional contexts of Hong Kong; b) comprehensive in covering commonly desired developmental outcomes arising from service-learning there; c) standardized, so as to be appropriate for service-learning courses and programs across the full range of academic subjects; and d) composed of distinct sub-scales, thus offering institutions and researchers flexibility to create shorter versions, focusing on particular outcome domains.

Item development

For the most part, we adopted a deductive method for scale development, but this was supplemented by an inductive method. A deductive method involves creating survey items that are based on theory-based definitions of the target domain constructs, following an extensive literature review and a thorough examination of pre-existing scales. Typically, it is adopted when there are established theories about the constructs that are to be measured already existed (Boateng et al., 2018; Hinkin, 1995, Hinkin et al., 1997; Morgado et al., 2017). An inductive method, by contrast, is not theory-based, and involves identifying constructs and establishing the appropriateness of survey items based on the opinions of subject matter experts, collected by means of interviews, focus groups (Hinkin, 1995, Hinkin et al., 1997), or electronic media.

Earlier sections of this paper have reviewed the past literature and have developed a conceptual framework for S-LOMS. In addition, we conducted a review of pre-existing instruments that have been used for assessing developmental outcomes for students arising from service-learning, yet we could only identify a small number of measurement scales for that had been validated in both western and Hong Kong-based studies.

This dearth reflects that even in the west, there are few salient standardized and validated instruments for assessing development outcomes for students, arising from service-learning (Toncar et al., 2006), and that among these, most have been narrowly focused on specific outcome domains (Bringle et al., 2004), such as civic learning (e.g. Eyler et al., 1997; Olney & Grande 1995), and community self-efficacy (e.g. Reeb et al., 1998). We also examined the Service Learning Benefit scale (SELEB), developed by Toncar et al. (2006), which is atypical in that it encompasses a broad range of self-perceived benefits arising from service-learning. We judged, however, that

the SELEB may lack reliability because it asks respondents to provide generalized ratings on particular constructs, such as "personal growth" and "skills in learning from experience" without going into specifics or providing conceptual explanations.

As noted earlier in this paper, we found that when assessing self-perceived developmental outcomes arising from service-learning, Hong Kong-based researchers have tended to borrow measurement scales that have been developed in the west. We were only able to identify one pre-existing standardized instrument, the so-called common outcomes measure (COM) for assessing a wide range of developmental outcomes arising from service-learning (Ma et al., 2019). This assesses outcomes in nine domains, namely self-understanding/confidence; communication skills; problem-solving skills; civic engagement, social responsibility and willingness to contribute; team skills; self-reflection; general knowledge application; caring for others; and intercultural competence. The COM was initially validated with a relatively small sample (N = 193). We took reference of this generic scale, along with some domain-focused scales found in the prior literature and in use by particular tertiary education institutions in Hong Kong, such as a scale for self-esteem (Rosenberg, 1965)

Once agreement on the conceptual framework for students' developmental outcomes (Table 3) had been reached, we adopted an inductive approach for item development across the 15 constituent domains. First, we formed a panel of local practitioners-cum-researchers, comprising faculty members with service-learning experience from four institutions adopting service-learning pedagogy, namely Lingnan University, The Hong Kong Polytechnic University, Hong Kong Baptist University, and The Education University of Hong Kong. This panel identified a small number of sub-domains for each of the 15 domains, and then engaged in brainstorming sessions to generate potential survey items for the various sub-domains, thereby generating a total of 103 prospective items for a draft S-LOMS.

Second, in line with the recommended approach by DeVellis (2003), these emerging items were evaluated by a different group of subject matter experts (SMEs), who also were experienced service-learning practitioners from the above institutions. The initial panel then reviewed the SMEs' comments before compiling the draft S-LOMS for subsequent item validation, as described next.

Item validation

Procedure and participants. The draft S-LOMS in English was then subjected to a pilot study, which aimed at testing item readability for the target respondents, namely students studying at tertiary education institutions in Hong Kong. Six pilot sessions were held at the abovementioned institutions through face-to-face administration. Each session lasted about one hour with no more than 20 participants and comprised two parts. In the first part, which was around 40 minutes, the participants were invited to answer the draft S-LOMS and note when they encountered any difficulty in understanding items. In the second part, which was around 20 minutes, the participants

were invited to raise any comments they wanted to share with the administrator, about any issue regarding language, such as the use of words or ambiguity when answering the draft S-LOMS. The pilot sessions collected responses from altogether 83 participants, comprising 29 males (34.9%) and 54 females (65.1%), with the mean age of 20.5. Their comments shared in the session and written on the draft S-LOMS were then analyzed and discussed by the panel, with the result that two items were discarded, and 35 items were revised in wording in order to enhance readability.

With the revised draft measurement instrument, a validation exercise was implemented to test the psychometric properties, such as underlying dimensionality and internal consistency. S-LOMS was then administered in class on a collective basis. Students were informed of the rationale of this validation exercise and were invited to join voluntarily, and those who did not want to participate could choose to leave. The remaining students were then instructed to indicate their consent and answer the revised S-LOMS, along with some demographical information, including gender, age, major of study, prior service-learning experience, under the assurance of data confidentiality. Each respondent was offered a supermarket gift voucher valued at HK$50 as a token for their participants upon completing the revised S-LOMS. A total of 400 university full-time students at the four collaborative institutions completed the revised S-LOMS via classroom administration, with 397 of them providing demographic data. Among them, 35.0% were male respondents while 65.0% were female respondents, and the mean age was 20.9. They came from various disciplinary backgrounds (Arts: 23.4%; Social Science: 15.6%; Business: 22.4%; Engineering & Science: 27.5%; Nursing: 11.1%). Most respondents, 70.5%, had previous service-learning experience.

Multiple methods were adopted to explore the dimensionality of the revised S-LOMS and the stability thereof. First, owing to the large number of measurement items and their underlying domains, the Minimum Average Partials (MAP) test was employed to provide guidance for determining the number of factors under the four categories. The MAP test, which involves principal components analysis with the examination of a series of matrices of partial correlation, is regarded as one of the best methods to obtain optimal solutions to the number of components in factor analysis (O'Connor, 2000). The items within the four categories were inputted into the MAP program developed for SPSS by O'Connor (2000) to obtain the number of optimal factors under each category.

*Statistical analysis***.** Each category's items were then analyzed by Exploratory Factor Analysis (EFA) in IBM SPSS version 23.0 by the specification of the number of factors to that category obtained in the MAP test. Specifically, the Principle Components method with oblimin rotation was employed, given that correlations were expected among domains of the measurement instrument. Two exclusion criteria were adopted in reducing the number of items in the EFA, with the purpose of simplifying the final factor structure. First, any items with the highest factor loading lower than 0.4 in absolute value were removed, given that "one would want in general a variable

to share at least 15% of its variance with the construct (factor) it is going to be used to help name" (Stevens, 2009). Second, any double-loaded items were removed. After exclusion, the EFA was re-administered. In the event that all items obtained satisfactory absolute values of factor loadings, some would be discarded based on the consideration of semantic proximity and the results of item-total correlation. Owing to the large number of tested domains and items, as well as that the four categories were expected to be theoretically distinctive yet empirically related, four sets of EFA were separately performed for the four categories in exploring underlying dimensionality.

Results

The MAP test results indicated different optimal factor numbers for different categories, specifically one factor for the category of knowledge application, five factors for the category of personal and professional skills, four factors for the category of civic orientation and engagement, and three factors for the category of self-awareness. Table 4 below depicts the results of the four category MAP tests.

***Table 4*.** The MAP Test Results for the Four Categories of the Measurement Instrument

Category	Optimal Number of Factors
Knowledge Application	1
Personal and Professional Skills	5
Civic Orientation and Engagement	4
Self-awareness	3

The EFAs for determining the factor numbers guided by the above MAP test results for the four categories were then administered by following the afore-mentioned item exclusion and selection procedures. The analysis results indicated a clear factor structure at the higher order with satisfactory factor loadings. Tables 5 to 8 illustrates the resulting S-LOMS by category.

Specifically, the items for the category of knowledge application converged to a single factor with factor loadings between .799 and .881, with variance explained 72.35% ($\alpha = .872$).

Table 5. Results for the Items of the Category of Knowledge Application

No	Item	Absolute Value of Factor Loading	Item-Total Correlation
1	I know how to apply what I learn in class to solve real-life problems.	.881	.771
2	I am able to apply/integrate classroom knowledge to deal with complex issues.	.867	.752
3	I know how to transfer knowledge and skills from one setting to another.	.853	.731
4	I can make connections between theory and practice.	.799	.656

Within the category of personal and professional skills, a four-factor structure emerged in the final result. The four factors are named as creative problem solving skills, comprising the original items of the domains of problem solving skills and creativity, with factor loadings between .472 and .867 (α =.919), relationship and team skills, comprising the original items of the domains of relationship skills and team skills, with factor loadings between .470 and .886 (α =.925), self-reflection skills, with factor loadings between .542 and .838 (α = .848), and d) critical thinking skills, with factor loadings between .411 and .732 (α =. 751). The overall variance explained by the category's items was 67.91% (α =. 961).

Table 6. Results for the Items of the Category of Personal and Professional Skills

No	Item	Absolute Value of Factor Loading				
		Creative Problem-Solving Skills	**Relationship and Team Skills**	**Self-reflection Skills**	**Critical Thinking Skills**	**Item-Total Correlation**
1	I am not afraid of trying new things.	.867				.610
2	I am able to generate original ideas.	.685				.700
3	I am able to solve challenging real-life problems.	.652				.783
4	I feel confident in dealing with a problem.	.635				.747
5	When necessary, I can think of alternatives.	.534				.764
6	I feel confident in identifying the core of a problem.	.518				.771
7	I am able to look at an issue from a fresh perspective.	.511				.720
8	I often modify my strategies to solve a problem when the situation changes.	.472				.744
9	I am good at keeping in touch with people.		.886			.691
10	I am good at building relationships between people.		.730			.691
11	I can build long-term relationships with people.		.716			.711
12	I can easily establish effective relationships with people.		.706			.749
13	I am good at resolving conflicts.		.649			.733
14	I am confident in leading others toward common goals.		.543			.731
15	I participate effectively in group discussions and activities.		.531			.761
16	I have the necessary skills for making groups or organizations function effectively.		.470			.764
17	I will evaluate myself after completing a task.			.838		.678
18	I reflect on myself regularly.			.766		.653

19	I always think how I can improve myself.	.633		.651
20	I consider circumstances when reflecting on how well I have performed.	.542		.710
21	I can analyze an issue comprehensively.		.732	.601
22	I often look at complex issues from different angles.		.654	.655
23	I can understand others' viewpoints when we are making decisions together.		.411	.627

Within the category of civic orientation and engagement, the number of domains was simplified into a three-factor structure. The three factors are named as community commitment and understanding, comprising the original items of the domains of commitment to social betterment and understanding community, with factor loadings between .608 and .861 and ($\alpha = .919$), caring and respect, comprising the original items of the domains of respecting diversity and empathy and caring for others, with factor loadings between .467 and .795 ($\alpha = .907$), and sense of social responsibility, with factor loadings between .605 and .789 ($\alpha = .813$). The overall variance explained by the category's items was 67.71% ($\alpha = .946$).

Table 7. Results for the Items of the Category of Civic Orientation and Engagement

No	Item	Absolute Value of Factor Loading			Item-Total Correlation
		Community Commitment and Understanding	Caring and Respect	Sense of Social Responsibility	
1	I always actively discuss possible improvements for our community.	.861			.584
2	I can identify useful resources of a community.	.822			.724
3	I think about how I can serve the community after graduating.	.733			.639
4	I can identify challenges in the community.	.727			.709
5	I can investigate the challenges faced by people in need in a community.	.726			.726
6	I will contribute my abilities to make the community a better place.	.692			.735
7	I can identify issues that are important for a disadvantaged community.	.675			.726
8	I will play my part to reduce social problems.	.608			.719
9	I respect the needs of people from different backgrounds.		.795		.645
10	I appreciate the ideas of people from different backgrounds.		.789		.693
11	I am willing to try to understand people whose background is different from mine.		.751		.736
12	I can respect people whose background is different from mine.		.705		.576
13	I consider others' points of view.		.685		.690
14	I care about others.		.478		.746
15	I observe others' feelings and emotions.		.467		.692
16	I believe that everybody should be encouraged to participate in civic affairs.			.789	.622
17	I believe that taking care of people who are in need is everyone's responsibility.			.750	.681
18	I feel obligated to help those who are less fortunate than me.			.605	.700

Lastly, the items within the category of self-awareness reflected the designated structure with three resultant factors. These are self-efficacy, renamed from self-esteem, with relevant items retained, with factor loadings between .736 and .842 (α = .859), self-understanding, with factor loadings between .527 and .901 (α = .845), and commitment to self-improvement, with factor loadings between .660 and .941 (α = .829). The overall variance explained by the category's items was 72.01% (α = .922).

Table 8. Results for the Items of the Category of Self-awareness

		Absolute Value of Factor Loading			
No	**Item**	**Self-efficacy**	**Self-understanding**	**Commitment to Self-improvement**	**Item-Total Correlation**
1	I am satisfied with my achievement so far.	.842			.644
2	Most things I do, I do well.	.830			.694
3	I have many good qualities.	.770			.761
4	I am positive about myself.	.736			.721
5	I know my strengths and weaknesses.		.901		.639
6	I have a clear picture of what I am like as a person.		.877		.642
7	I have a clear understanding of my own values and principles.		.631		.743
8	I know what I need in my life.		.527		.700
9	I look out for new skills or knowledge to acquire.			.941	.641
10	I am always motivated to learn.			.762	.667
11	I always keep my knowledge and skills up-to-date.			.660	.736

Conclusions

The Emergent Model and Instrument for Service-Learning Outcomes in Hong Kong

The EFA results, given above, indicate a four-category, 11 domain model for student learning outcomes. This emergent Hong Kong model is based on the modified conceptual framework that we arrived at by adjusting a preliminary model from western literature, in the light of educational reforms and the observation that Confucian values appear to have shaped the local adaptation of service-learning in Hong Kong. In our Hong Kong model, the first category, knowledge application, comprises a single eponymous domain. The second category, personal and personal skills, comprises four domains: creative problem-solving skills, relationship and team skills, reflection skills, and critical thinking skills. The third category, civic orientation and engagement, comprises three domains: caring and respect, community commitment and understanding, and sense of social responsibility. The fourth category, self-awareness, comprises three domains: self-efficacy, self-understanding, and commitment to self-improvement.

There are four differences from the modified conceptual framework that was created before the EFA (see Table 3). These involve the combination of pairs of sub-domains into the following higher-order domains: creative problem-solving skills, which is combining creativity and problem solving skills; relationship and team skills, which is combining relationship skills and team skills; caring and respect, which is combining empathy and caring for others with respecting diversity; and community commitment and understanding, which is combining commitment to social betterment with understanding community.

Contrasts with the West

The Hong Kong model still bears some resemblance to the preliminary conceptual framework developed from western literature, which has three categories, academic enhancement, personal growth, and civic learning (e.g. Elyer & Giles, 1999; Felten & Clayton, 2011). There are, however, three main differences between the Hong Kong framework and the western framework. First, in the Hong Kong model, the category of knowledge application refers to the generic ability to apply knowledge and does not refer to other forms of academic enhancement that could be measured by course instructors through graded assignments. A second difference is that our Hong Kong model contains a separate category of self-awareness, as distinct from other aspects of personal growth that we identify as another category of personal and professional skills.

There is also a third difference, which reflects contrasting emphases between the civic orientation and engagement category in the Hong Kong model and the civic learning category in the western model. Within the latter model, civic learning emphasizes democracy, social justice, and joint action (Battistoni, 1997; Einfeld & Collins, 2008; Mitchell, 2008; Wade, 1997). As Battistoni (1997), states: “The civic view … focuses not on altruism but on enlightened self-interest …

The idea is that … free democratic communities depend on mutual responsibility and that rights without obligations are ultimately not sustainable."

By contrast, the Hong Kong model appears to invoke what Battistoni (1997) refers to as a "philanthropic" view of service-learning, based on the notion that "the well-off are obligated to help the less advantaged, though they do not conceive of those served as being part of their own communities" (Battistoni, 1997). This philanthropic orientation is evident in several items in our instrument within the category of civic orientation and engagement, such as the following three items. Under sense of social responsibility, item 18 is "I feel obligated to help those who are less fortunate than me;" under caring and respect, item 11 is: "I am willing to try to understand people whose background is different from mine;" and under community commitment and understanding, item 7 is "I can identify issues that are important for a disadvantaged community."

Allusions to democracy and joint action are not entirely absent from the Hong Kong instrument. Thus, item 16 under sense of social responsibility is, "I believe that everybody should be encouraged to participate in civic affairs." However, the overall emphasis is in alignment with the previous argument that the mainstream approach to civic education in Hong Kong is relatively depoliticized, emphasizing spirituality, self-cultivation, harmonious relationships, and preservation of the status quo (Lee, 2004).

Practical Implications

As a result of the validation exercise conducted thus far, the length of S-LOMS has been reduced from 103 to 56 items under the 11 outcome domains. S-LOMS has achieved satisfactory dimensionality and reliability, and has a clear domain structure with broad similarities with previous research studies, while reflecting local adaptation to educational norms and policies in Hong Kong. Furthermore, the factor structure and item compositions have been confirmed with a large sample (N=400), which conforms with the benchmark respondent to item ratio of five to one in factor analysis (Stevens, 2009). Such results provide a strong empirical foundation for the S-LOMS in terms of its internal consistency. We believe that the clear and strong factor structure of the instrument will enable it to be of considerable practical convenience both for institutions and for service-learning practitioners and researchers.

Looking ahead, our work for validating S-LOMS still requires some additional steps. First, the results obtained from the EFA and reported above need to be confirmed with another sample by means of Confirmatory Factor Analysis (CFA), before going on to engage in further testing for test-retest reliability. Subsequently, S-LOMS will be tested for criterion validity by administering it on a pre- and post-test basis with students, who are undertaking actual service-learning courses. This will enable us to investigate whether, for example, the domains in which students indicate their greatest developmental gains match the priority domains indicated by instructors. We will also investigate the sensitivity of the instrument to developmental outcomes for students

across different course types, service types, academic disciplines, and other factors. In addition, more item reduction work will be conducted with the aim of further reducing the S-LOMS to three items for each domain.

Furthermore, although S-LOMS has been designed for the Hong Kong context, we intend also to investigate its validity in other Asian contexts such as Taiwan and Singapore. As Hofstede (1980) revealed in his cultural assessment study, no two Asian cultures and regions should be assumed to be the same, despite many of them having been greatly influenced by Confucian traditions, such as Hong Kong, Singapore, Taiwan, and Japan. Differences between locations in terms of broader educational policies may constitute another source of variation regarding the local adaptation of service-learning practices. In the event that S-LOMS is found to be valid in other Asian contexts, this would enable comparative studies of the developmental impacts of service-learning for students in different locations, which in turn would address a broader gap regarding the lack of service-learning research in Asia (e.g. Shek & Chan, 2013; Xing and Ma, 2010).

Limitations

Besides the need to take further steps to validate S-LOMS in Hong Kong and other Asian contexts, the discovery of four higher-order factors implies that some developmental outcome domains may not be easily differentiated by means of a self-reported instrument. Assessing developmental impact within those domains may require additional or alternative methods for data collection, such as onsite observation, interviews, focus groups, and archival sources (e.g. Bringle et al., 2004). In addition, we have already mentioned that assessments of the impact of service-learning on students' understanding of subject knowledge may be more appropriately based on their performance on graded assignments and examinations. Accordingly, we acknowledge that a measurement instrument should not be regarded as a panacea, and that advancing understanding of the impact of service-learning on students in Asia will likely require multiple methods.

Author Note

This paper is the result of a cross-institutional project named “Cross-institutional Capacity Building for Service-Learning in Hong Kong Higher Education Institutions,” aiming at enhancing and supporting the development of service-learning as an effective pedagogical strategy under the collaboration of Lingnan University, The Hong Kong Polytechnic University, Hong Kong Baptist University, and The Education University of Hong Kong. The project was launched in 2017, and has been funded by the University Grants Committee (UGC) of the Hong Kong Special Administrative Region (HKSAR) government. The authors wish to thank the UGC for funding the project, and the above institutions for their participation in the process of scale development and

validation. We are particularly grateful to professor James Yue On Ko of The Education University of Hong Kong and Dr. Kam Por Kwan of The Hong Kong Polytechnic University for their advice on statistical analysis.

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Original Research

Building Capacity: The Case for Values-based Operations

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Cite as: Allen, J., Trent, S. & Woods, S. (2020). Building Capacity: The Case for Values-based Operations. *Metropolitan Universities,* 31(1), 78-91. DOI: 10.18060/23719

Editor: Valerie L. Holton, Ph.D.

Abstract

Since the opening of the University of Nebraska at Omaha's (UNO) Community Engagement Center in 2014, both university and community building partners have been guided by a set of core values. Established by a community/university task force after months of focus groups, community conversations, and other data gathering activities, these values have helped provide a foundation for the selection of university and community building partners, decision-making, and ongoing operations. This study explored the ways in which building partner alignment with the Weitz CEC values influenced their subsequent perceived organizational capacity. Results indicated that embracing the values was positively associated with increased perceptions of organizational capacity. Essentially, those who indicated they embraced the values experienced heightened feelings of belongingness, participated in more networking activities, and agreed that the culture was more cooperative, which contributed to their organization's perceived capacity.

Keywords: Values, Capacity Building, Community Engagement, Belonging

Introduction

The number of universities with campus centers or institutes of community engagement is substantial, with a recent investigation into the infrastructure of campus engagement centers receiving 147 responses from various engagement units at different universities (Welch & Saltmarsh, 2013). Such centers are important hubs of engagement activities at universities and can aid in engagement between a university and its community through efforts to coordinate

service learning (Bringle & Hatcher, 2000), facilitate volunteering and community service on campus (Bringle & Hatcher, 2002), and aid in the building of university-community partnerships (Bringle & Hatcher, 2002). For institutions that have or are hoping to develop spaces in which community and university entities coexist within a shared facility, understanding the relationship between how a space is framed and participant outcomes is critical. Creating such spaces requires human, financial, and social capital and such investments deserve a clear understanding of the outcomes produced by the space and the collaboration that occurs therein.

The Community Engagement Center (CEC) on the University of Nebraska at Omaha's (UNO) campus, opened in 2014, has adopted many of the community programming practices compiled by Welch and Saltmarsh (2013), but is unique in the provision of shared space, with a total of 15,000 square feet for community and university organizations, which are located and operate directly within the center itself (Woods, Reed, & Smith-Howell, 2016). Partners are selected with attention to their alignment with the CEC's values (e.g., reciprocity, collaboration, communication, diversity, civil and open dialogue, welcoming atmosphere and continuous improvement) and maintain space within the building for three to six years, during which they are provided with resources (e.g., free meeting space, access to capacity building initiatives, access to student volunteers, contacts with faculty who conduct engaged research, marketing and administrative support etc.) to support their growth and sustainability. A detailed accounting of the operations of UNO's CEC may be found in Woods, Reed, and Smith-Howell (2016).

Our hypothesis is that organizations that demonstrate values-inspired behaviors report higher levels of perceived organizational capacity. Capacity is an important factor in determining impact. Capacity building can be defined abstractly as "increasing the ability of an organization to fulfill its' mission," (Wing 2004, p. 155). Capacity provides an indication of an organizations' progression over time. It also provides an indication as to the effectiveness and sustainability of an organization. Shumate, Fu, and Cooper (2018) found that nonprofits with strong collaborative relationships with government agencies had greater strategic planning capacity than nonprofits that did not. Another study by Williams-Gray (2016) suggested that nonprofits that go through a process of evaluating their individual capacity are more likely to build capacity in the future. Finally, Kapucu and Demiroz (2013) found evidence that an organization's capacity can be increased through the use of strong relationships and networks with other nonprofits. Given these findings and the overt focus on a values-framed engagement environment, we investigated the following research question: how does a values-framed engagement environment affect perceptions of organizational capacity?

Method

Participants

Respondents were individuals working within UNO's CEC, including those affiliated with a community organization (i.e., community partners) and those affiliated with a university organization (i.e., UNO partners). A total of 57 community partners and 54 UNO partners filled out the annual survey. Of those who responded, 75.3% of individuals were female, 22.2% of individuals were male, and 2.5% of individuals selected a gender other than female or male. The average age of respondents was 39.36 (*SD = 15.46*), with all individuals between 20 and 79 years old. In terms of education, all individuals had graduated from high school (or the equivalent). Many (48.1%) had a graduate degree of some sort. The survey respondents included some students (*N = 43*) and faculty (*N = 14*) working within partner agencies.

Measures

Values Behavior. The CEC has seven values to help guide partner and staff operations within the building, including: (a) diversity; (b) civil and open dialogue; (c) collaboration; (d) reciprocity; (e) communication; (f) welcoming atmosphere; and (g) continuous improvement. A thirty-three item questionnaire was included within the annual survey to measure the extent to which individuals from partnering organizations agreed they exhibited a variety of behaviors associated with the values. Partners rated their own behaviors on a Likert scale from one (strongly disagree) to seven (strongly agree). A sample item of each value can be found in Table 1.

Belongingness. Four items from the Sense of Community Scale (Horning, Robinson, & Carroll, 2014) were used to assess the extent to which building partners felt they were a part of the CEC. Items were modified to reference the CEC. Respondents selected their degree of agreement using a five-point Likert scale from one (strongly disagree) to five (strongly agree). A sample item is: "If someone criticizes the CEC, it feels like a personal insult."

Networking Frequency. To determine intra CEC networking frequency, building partners were presented with four questions from the Networking Behavior Questionnaire (Michael & Yukl, 1993), framed to seek information about networking occurring within the CEC (e.g., attend meetings, ceremonies, or special events in the CEC). Respondents rated the frequency with which they performed each behavior in their role as a building partner on a Likert scale from zero (never) to four (on a daily basis).

Table 1: CEC Values, Definitions, and Sample Items

	Definition	Sample Item
Civil and Open Dialogue	The CEC is a space where all opinions can be heard, and different ideas are not only respected, but encouraged, because diversity of thought fosters innovation and creativity.	"While at the CEC, I felt free to initiate dialogue around controversial topics."
Collaboration	Our community faces complex social problems that require unique and novel solutions. The CEC strives to cultivate a collaborative environment, in which people are willing to organically develop creative strategies and partnerships for solving such issues. The partnerships crafted as a result of being in the CEC should not be forced, but rather a product of revealing shared goals and a willingness to build alliances between university and community partners.	"I collaborated with other partners or individuals on projects to address community issues at the Weitz CEC."
Communication	We encourage thoughtful, respectful, and transparent communication between all individuals who use the CEC including community partners, faculty, staff, and students.	"I used many modes of communication to suit the needs of my target population."
Continuous Improvement	Basing decisions for improvement on direct feedback and concrete data ensures that organizations can continue having positive impacts on the community. The CEC leadership hopes that community and university partners will grow in many ways, but mostly that all partners will be better equipped to serve the Omaha community as a result of being in the CEC.	"I systematically tracked my organization's progress in the last 6 months."
Diversity	We actively seek to represent the many diverse ideas, backgrounds, and cultures that comprise Omaha and the university community.	"My organization has come up with original and innovative ideas."
Reciprocity	The CEC is considered a portal through which the community and the university can exchange resources, ideas, and solutions. Through reciprocal relationships, in which goals and expectations are clearly stated and fulfilled, community and UNO organizations interact with and benefit from each other.	"When completing collaborations, I followed up to ensure expectations were met."
Welcoming Atmosphere	We value everyone who uses the building and show that by creating an environment that is clean, easy to access, filled with friendly faces, comfortable for all, and meets people's physical needs.	"When hosting an event in the Weitz CEC, I helped to clean-up afterward."

Cooperative Building Culture. Perceptions of the culture of the CEC were measured with two climate items from the Employment Relationships Scale (Buch & Dysvik, 2010). Questions were reworded to reflect the CEC space (e.g., "There is a high level of cooperation between those that work in the CEC") and rated by survey respondents on a scale from one (strongly disagree) to five (strongly agree).

Perceived capacity. To determine building partners' perceptions of their capacity, we developed three questions for the annual survey to gauge the influence of the CEC on their organizations' operations. A sample item is: "Being in the CEC has contributed positively to my organization's sustainability." Partners rated each statement on a Likert scale from one (strongly disagree) to five (strongly agree).

Procedure

The CEC annual building survey was distributed to 238 individuals working within the Barbara Weitz Community Engagement Center. The survey was open for a total of four weeks beginning in April 2017 and lasting through May 2017. Those who had not taken the survey were sent a reminder email every week. Those who took the survey were thanked for their responses. Individuals who completed the survey were entered into a drawing to win a $25 credit on their UNO MavCard (i.e., campus ID card). Of the original 238, responses were obtained from 137 individuals in the building, resulting in a response rate of 57.56%. For the purposes of the following analyses, 13 individuals were removed from the sample for being staff members in the CEC, as we were interested in the responses from individuals who were building partners. This resulted in a final sample of 124 individuals. After four weeks, the survey was closed and all individuals were thanked, again, for taking the survey.

Results

Descriptive statistics and intercorrelations for all scales utilized in this study are presented in Table 1. There was evidence of range restriction present with several of the values, including diversity and communication, which ranged from values of four to seven, and a welcoming atmosphere and reciprocity, which ranged from values of three to seven. In spite of these initial concerns, no issues were detected in terms of skew or kurtosis, so we proceeded with analyses. Three sets of analyses were used to explore the overarching research question and are described here.

In the first analysis, we sought to understand if self-reported values behaviors were associated with greater perceptions of organizational capacity. To test this question, we first examined the correlations between each value and capacity. Enacting behaviors of six of the seven values were

significantly and positively associated with reported perceived capacity, including diversity r(72) = 0.47, p < .001, civil and open dialogue r(73) = .34, p = .004, collaboration r(73) = .30, p = .009, reciprocity r(73) = .42, p < .001, communication r(73) = .43, p < 001, and continuous improvement r(72) = .42, p < .001. A welcoming atmosphere was not significantly associated with perceived capacity (see Table 1). To further assess the first research question and to better understand if any values were predictive of perceived capacity above and beyond the other values, we regressed all values upon perceived capacity simultaneously. The amount of time spent in the CEC was also included in the analyses as a covariate, as it correlated with several key variables. The full model for the regression was significant $F(8,81) = 7.87$, $p < .001$, $R^2 = .24$, indicating that together with the time spent in the CEC, all seven values predicted perceived capacity, accounting for 44% of the variance in perceived capacity.

In the second set of analyses, we we examined the individual coefficients for each value in the multiple regression model where all seven values predicted partners' reported perceived capacity. The coefficient for two variables, including diversity, $\beta = .34$, $p = .025$, CI [0.03, 0.46] and continuous improvement, $\beta = .29$, $p = .028$, CI [0.02, 0.34], were significant above and beyond all other values (see Table 2).

Table 2: Means, Standard Deviations, and Intercorrelations for Study Variables

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Belongingnes	3.84	0.83	(.87)											
2. Network	1.73	0.55	.33*	(.79)										
3. Culture	4.17	0.72	.25*	-.13	(.65)									
4. Capacity	4.58	0.68	.08	.03	.36**	(.85)								
5. Diversity	5.92	0.77	.40**	.29**	.25*	.44**	(.74)							
6. Dialogue	5.55	0.96	.35*	.29**	.35**	.30*	.68**	(.83)						
7. Collaboration	5.41	0.97	.49**	.50**	.30**	.25*	.67**	.68**	(.75)					
8. Reciprocity	5.71	0.93	.48**	.24*	.32**	.37**	.75**	.57**	.62**	(.82)				
9. Comm	5.68	0.70	.27*	.33**	.38**	.39**	.72**	.58**	.66**	.72**	(.67)			
10. Atmosphere	5.77	0.87	.28*	.39**	.06	.01	.48**	.43**	.51**	.48**	.47**	(.52)		
11. Improvement	5.59	0.97	.47**	.19	.37**	.33**	.50**	.51**	.61**	.51**	.52**	.25*	(.61)	
12. Partner Status	0.51	0.50	.13	-.15	.06	-.12	.01	-.04	.07	.08	-.05	-.02	.11	-

Notes. N = 83 - 111. Reliabilities are on the diagonal. *$p < 0.05$. **$p < 0.01$. Belongingness, Culture, and Capacity were rated from 1 (*strongly disagree*) to 5 (*strongly agree*). Networking behavior was rated from 0 (*never*) to 4 (*on a daily basis*). All values were rated from 1 (*strongly disagree*) to 7 (*strongly agree*). Partner status was coded 0 (*university partner*) or 1 (*community partner*).

In the third and final set of analyses, we examined three factors that may function as intermediary mechanisms, including feelings of belongingness reported by partners, the networking behaviors of individuals in the building, and the overall cooperativeness of the building culture itself (see Figure 1). A series of mediations were conducted to determine if these variables operated as mediators through which any of the values influence perceptions of organizational capacity. We identified eleven significant mediations between various values and partner capacity through intermediary variables. Of particular note were the indirect relationships between a welcoming atmosphere and partner perceived capacity through all three mediators, including belongingness (b = .05, Boot SE = .03, CI [0.00, 0.13]), culture (b = .21, Boot SE = .06, CI [0.08, 0.33]), and networking frequency (b = .07, Boot SE = .03, CI [0.01, 0.13]). Reciprocity also influenced partner perceived capacity through all three mediators of belongingness (b = .03, Boot SE = .02, CI [0.01, 0.08]), culture (b = .04, Boot SE = .03, CI [0.00, 0.11]), and networking frequency (b = .06, Boot SE = .03, CI [0.01, 0.11]). A civil and open dialogue was indirectly related to partner perceived capacity through both belongingness (b = .03, Boot SE = .02, CI [0.00, 0.09]) and networking (b = .05, Boot SE = .02, CI [0.01, 0.10]). Collaboration was indirectly related to partner perceived capacity through networking frequency (b = .04, Boot SE = .02, CI [0.01, 0.10]). Finally, diversity indirectly influenced perceived capacity through networking frequency (b = .04, Boot SE = .02, CI [0.00, 0.09]). No significant mediators were identified between either continuous improvement and partner perceived capacity, or between communication and partner perceived capacity (see Table 3).

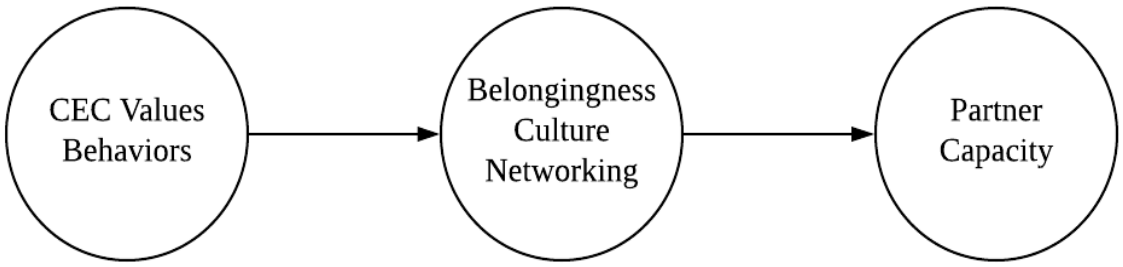

Figure 1. Hypothesized indirect effect of CEC values behaviors on partner capacity through belongingness, building culture, and networking frequency.

Table 3: Multiple Regression Analyses of All Values Behaviors and Partner Report Capacity

	F	R^2	*b*	*SE*	β	t	95% CI
Constant	7.15**	0.38	1.68	0.45		3.74	[0.79, 2.58]
Civil and Open Dialogue			0.03	0.08	0.05	0.39	[-0.13, 0.19]
Collaboration			0.00	0.07	0.00	0.00	[-0.13, 0.13]
Communication			0.06	0.11	0.49	0.49	[-0.18, 0.29]
Continuous Improvement			0.16†	0.09	1.94†	1.94	[-0.00, 0.33]
Diversity			0.21†	0.11	1.86†	1.87	[-0.01, 0.43]
Reciprocity			-0.01	0.08	-0.08	-0.08	[-0.17, 0.16]
Welcoming Atmosphere			0.04	0.08	0.48	0.48	[-0.12, 0.20]

Note. $N = 96$, $^{**}p < 0.05$, $^{*}p < 0.01$, $\dagger p < 0.10$.

Table 4: Indirect Effects of Values Behaviors on Partner Reported Capacity through Belongingness, Culture and Networking

		Estimate	*Boot SE*	95% BC CI
IV: Civil and Open Dialogue				
	Belongingness	0.03*	0.02	[0.00, 0.09]
	Networking	0.05*	0.02	[0.01, 0.10]
IV: Collaboration				
	Networking	0.04*	0.02	[0.01, 0.10]
IV: Diversity				
	Networking	0.04*	0.02	[0.00, 0.09]
IV: Reciprocity				
	Belongingness	0.03*	0.02	[0.01, 0.08]
	Culture	0.04*	0.03	[0.00, 0.11]
	Networking	0.06*	0.03	[0.01, 0.11]
IV: Welcoming Atmosphere				
	Belongingness	0.05*	0.03	[0.00, 0.13]
	Culture	0.21*	0.06	[0.08, 0.33]
	Networking	0.07*	0.03	[0.01, 0.13]

Note. $N = 96$, BC CI = Bias-corrected Confidence Intervals. Only significant relationships are depicted. Communication and continuous improvement did not significantly influence capacity through mediators.

Discussion

The increasing number of community engagement units or centers underscores the need for attention to factors which influence their effectiveness, but relatively few studies have explored this area. The goal of the current study was to add to existing knowledge by evaluating the role that building values may have upon the operations of campus centers of engagement. Specifically, we sought to examine: (a) if higher levels of self-reported values behaviors were associated with greater perceived capacity; (b) if some values behaviors predicted perceived capacity above and beyond other values behaviors; and (c) how values behaviors might influence perceived capacity. Although some literature has explored characteristics of campus engagement centers (e.g., Welch & Saltmarsh, 2013) and other has focused on best practices derived from a case study of a particular unit (e.g., Grorack & McCall, 2018), no studies on campus engagement centers to date have utilized annual survey data gathered from the community and university partners working directly in the unit or building. Given the findings just discussed, there are several implications for organizations of higher education interested in establishing or re-invigorating shared spaces.

General Implications for Practice

Institutes of higher education and community partners may use the findings provided here to help them in their efforts to create a collaborative value-based environment. Essentially, other institutes of higher education may want to replicate a values-centered framework within shared-space facilities. This could be done in three meaningful ways. First, given the association of values behaviors with perceived capacity, organizations may want to build a culture of value-based behaviors within similar shared-space centers (e.g. Tyler, Dienhart, & Thomas, 2008). These institutes may want to include things like reciprocity between agencies that are partnering on various initiatives, maintaining an atmosphere where individuals feel welcome, advocating for a civil and open dialogue, and so on. Additionally, some institutes may already have values and simply may need to emphasize them (Giberson, Resick, & Dickson, 2009), encourage more formal adoption of them by partners, and expect new partners to buy into the values-centered approach.

Second, since two values, diversity and continuous improvement, emerged as influential predictors above and beyond the other values, those institutes seeking to start fresh with a values-centered framework may want to incorporate these specific values over some others. Both values might serve as a starting point for universities hoping to get their community or other university partners more engaged and involved at their campus centers. Specifically, organizations which show a high level of diversity, whether within the organization itself, in terms of the individuals who are served, or in terms of the ideas the agency represents, may be more likely to build

capacity in a shared-space setting (Hawkins, 2014). Conversely, organizations with a dedicated focus on tracking their progress and finding ways of continuously improving their programs and services would likely also thrive (Al-Tabbaa, Gadd, & Ankrah, 2013).

Third and finally, even though the findings on the intermediary mechanisms did not support mediation, they serve as additional areas of emphasis for any institute attempting to foster a values-focused shared space (Welch & Saltmarsh, 2013). For example, a notable finding had to do with networking frequency, which as a mediating variable, explained the influence of five of the seven values on organizational capacity. In other words, the values chosen and emphasized at the Weitz CEC appear to help support networking, which in turn influences partner perceived capacity. Regardless of the values selected, the networking frequency mechanism is likely an essential functioning variable in the success of a shared collaboration space (Herman & Renz, 2008).

Limitations and Future Research

The present study is not exempt from limitations. First, data were gathered using self-report measures at one-time point and are thus cross-sectional in nature, making it impossible to infer causality. However, in alignment with current theory and practice, when ascertaining information about individual perceptions (e.g., capacity) and attitudes (e.g., belongingness), it is appropriate to utilize self-report instruments (Conway & Lance, 2010). A more accurate method of assessing behaviors, such as networking frequency, would be of interest for future research.

Second, although our measurement of perceived capacity was of use in understanding the overall influence of values behaviors, future studies could focus on how values influence different types of impact rather than overall capacity. For example, a recent article by Srinivas, Meenan, Drogin, and DePrince (2015) found some evidence that impact can be understood through seven dimensions, including: (a) social capital; (b) skills and competencies; (c) motivations and commitments; (d) personal growth and self-concept; (e) knowledge; (f) organizational operations; and (g) organizational resources. Evaluating the relationships between values behaviors and multiple dimensions of perceived capacity could provide information on which values are the critical in different situations.

Third, data were gathered from community and university partners housed within UNO's CEC. Although we believe many of the relationships captured in this study would hold true between university and community partners operating in partnership with other campus centers of engagement around the country, it is possible that some of the high scores obtained in our sample would not come through if partners and their respective organizations were not housed in the same building. For example, partners may have fewer opportunities to network when spread

across greater distances or feel a decreased sense of belongingness with the campus if they spend less time physically present.

Conclusion

The findings in this study reinforce the importance of emphasizing values within campus centers of community engagement with a high degree of university and community partner participation (Woods, Reed, & Smith-Howell, 2016). Overall, both direct and indirect relationships between values behaviors and partner perceived capacity stress the utility of identifying partners with shared values if the sustainability of partnering organizations is to be enhanced. Specific findings regarding networking frequency, as well as the importance of diversity and continuous improvement in the prediction of partner perceived capacity provide a starting point for those seeking to build a culture where the satisfaction and effectiveness of a university's partners is upheld.

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Original Research

How Can We Help You?
An Exploration of What Institutional Websites Reveal About First-generation Support Services

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Cite as: Hodge, L., Wilkerson, A. & Stanislaus, E.P. (2020). How Can We Help You?: An Exploration of What Instutitional Websites Reveal About First-generation Support Services. *Metropolitan Universities,* 31(1), 92-112. DOI: 10.18060/23360

Editor: Valerie L. Holton, Ph.D.

Abstract

Institutional websites are powerful tools that communicate wide range of information. Providing access to higher education requires institutions to consider how services are communicated with a goal of engaging students from diverse populations. This study utilized a conceptual content analysis to review university and college websites to determine how information about support services for first-generation students is electronically communicated. The researchers constructed an evaluative study to assess 14 institutions to formulate a critique and extend the work of Eccles's expectancy-value theory (1984), which suggests that achievement-related choices are motivated by students' expectations for success. The results of this study found salient factors to indicate that institutions sought to provide support for first-generation students, but relevant information was not always explicitly conveyed on websites, particularly in ways most likely to engage diverse populations.

Keywords: first-generation, college students, expectancy-value theory, content analysis, rubric

Introduction

Substantial research is dedicated to understanding first-generation college students with regard to inclusion, transitional experiences, and academic achievement (Pike & Kuh, 2005; Tinto, 2012; Toutkoushian, Stollberg, & Slaton, 2018). As a result, researchers have provided a perspective on descriptions of first-generation college students (Saenz, Hurtado, Barrera, Wolf, & Yeung, 2007), their rate of college completion (Greenwald, 2012), and barriers that might inhibit first-generation students' progress toward degree completion (Stephens, Fryberg, Markus, Johnson, & Covarrubias, 2012). These key areas of knowledge situate how post-secondary institutions describe axioms of support that are congruent with services provided to first-generation college students (Petty, 2004).

Many studies suggest that first-generation college students are more likely than their counterparts to leave college without a degree (Engle, Bermeo, & O'Brien, 2006; Engel & Tinto, 2008; Mehta, Newbold, & O'Rourke, 201). Similarly, literature has shown the difficulty of defining characteristics which encompass a concrete description of first-generation students (Chen, 2005; Redford, & Hoyer, 2017; Warburton, Bugarin, & Nunez, 2001). What is consistent though, is that the term first-generation student often refers to learners whose parents lack some form of college credentials (Cataldi, Bennett, & Chen, 2018). Furthermore, scholarship regarding first-generation students robustly accounts for services which fortify college completion to include: scaled multidimensional academic, emotional, and financial support (Dennis, Phinney, & Chuateco, 2005; Jenkins, Belanger, Connally, Boals, & Durón, 2013; Lohfink & Paulsen; 2005). Moreover, data presented by the National Center for Education Statistics (Cataldi, Bennett, & Chen, 2018) confirmed that first-generation college students account for nearly one-third of students enrolled in U.S. post-secondary institutions. Given the necessity of supporting first-generation students, other areas of research are devoted to understanding the characteristics and needs of this student population. Alongside the existing body of empirical works, research on first-generation students has expanded to also include how collegiate programmatic interventions might assist in progressing through degree completion (Engle, Bermeo, & O'Brien 2006; Ishitani, 2006; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996). Over time, researchers have identified barriers that contribute to conditions that inhibit student success. Among those barriers are socioeconomic status, academic preparedness, and/or campus engagement (Allen, Muragishi, Smith, Thoman, & Brown, 2015; Stebleton & Soria, 2013). However, the literature has not identified how to disseminate information regarding available support services to first-generation students. Relatedly, Gordon and Berhow suggested that post-secondary websites have the capacity to build dialogic exchanges with student users (2009). Moreover, our research on the needs of first-generation students makes clear that it is important to identify and articulate both what services are needed and how students can independently locate these services through an institution's website. *The National College Access Network Repo*rt indicates the existence of shrinking options for low-income students nationwide due to growing disparities in college cost

versus student affordability (2019). However, legislative reform efforts through the Higher Education Act (2017), and the Aim Higher Act (2018) have leveraged additional resources to support low-income, first-generation students. The existence of programs designed to ease the financial burden of low-income students makes critical the work of those conducting first-generation student research; first, they must begin to critically frame the premise of first-generation student support beyond merely identifying such students and itemizing their needs. Next, they must account for how to disseminate information about said services.

The United States Department of Education produced a study which clarified the critical issues regarding first-generation college students. In the report, *First-Generation Students* (2018), data about college access, persistency, and post-bachelor's outcomes indicated that first-generation undergraduate students were less likely to earn a credential in comparison to their counterparts whose parents did attend college (Cataldi, Bennett, & Chen, 2018). Another revealing conclusion was that first-generation data focused on describing the student and providing typologies of student success based on data correlating parental background information with college completion trends. Nevertheless, there remains a void in academic literature specifically focused on the trajectory and/or active academic support as it pertains to institutional practices regarding leveraging online spaces to connect first-generation students with information for support services (Wilson, 2004).

For instance, Pascarella, Pierson, Wolniak, and Terenzini's (2004) discussions on first-generation students omits an acknowledgement of how students can locate information about services, instead referencing only what services are needed to successfully progress to and through the college experience. In contrast, embedded into the available body of knowledge is research that focuses on utilizing the internet to counsel students, predict student success, and/or use technology to survey student experiences in the first year (Chang, T. & Chang, R; 2004; Kennedy, Judd, Churchward, Gray, & Krause, 2008). In other words, the shared seminal work suggests that first-generation students are an important topic of study. Interestingly, this argument serves as a starting point for investigating first-generation college students more broadly.

The research team intended to extend the work of previous studies by conducting an examination of universities, to include major metropolitan urban universities, to understand the needs of this population and how to provide pathways for these students to electronically locate helpful academic information. One way to achieve the goal of identifying methods to share information about available support services with first-generation college students is to thoroughly examine information currently provided by colleges and universities. To this end, the research team explored urban metropolitan institutions and examined the extent to which they share support services online with first-generation students seeking information about undergraduate degree offerings. Thus, the purpose of this study was to investigate how colleges and universities

aggregate and/or organize academic and nonacademic support for first-generation college students. The research questions for this study were as follows: How does the southeastern region of the Coalition of Urban and Metropolitan Universities (CUMU) communicate information about first-generation student services on institutional websites? What pathways exist to locate information about first-generation student services on institutional websites?

The significance of this study is twofold. First, there continues to be groundbreaking empirical data on first-generation students, their needs, and ways in which universities aid and support their success. Second, first-generation scholarship is very much rooted in the academic trajectories of undergraduate post-secondary students. Specifically, first-generation students often study at large metropolitan urban institutions (McGregor, Mayleben, Buzzanga, & Davis, 1991). At the same time, the ways in which institutions provide service information for first-generation students online are rarely evaluated. An examination of the existing information on institutional websites will aid in the development of more effective practices associated with supporting first-generation students with information about how they might independently utilize school-based resources to succeed. Moreover, this work deconstructed digital discourse as it relates to improve the academy for learners (Devine & Levin, 2013).

Literature Review

College websites are one tool that students use at a high rate to gather information. According to the National Association for College Admission Counseling (2018), email and websites are the primary sources of information for first-time freshmen students. Of particular importance is how content is organized and the ease of navigation, which also includes the number of clicks students must take to reach the content they seek (Meyers, 2008). Poock & LeFond (2001) illuminated the elements that are barriers for prospective students, including inefficient search functions, not locating desired information, and too many clicks to reach desired information. Given the importance of websites to first year students, it is imperative to analyze how higher education institutions use their websites to communicate resources that would be critical to the success of first-generation students.

First-Generation Students

The U.S. Department of Education defined first-generation students as students whose parents have achieved a high school diploma or less (Nunez & Cuccaro-Alamin, 1998). Institutions have adopted varying definitions, to include some college education without receiving a degree, and even encompassing parents who have received a college degree outside of the U.S. (Whitley et al., 2018). Traditionally, federally-funded programs such as TRIO, Student Support Services, and Ronald E. McNair Post-Baccalaureate Achievement Program have provided much needed support to first-generation and low-income students (Engle & Tinto, 2008). The importance of

identifying first-generation students lies in institutions' ability to efficiently monitor and support their academic success (Center for First-Generation Student Success, 2017).

First-generation students tend to attend higher education institutions that are located close to home and are typically 2-year and 4-year public institutions. The decision to attend these institutions is due in large part to familial financial contribution, parent motivation, student career goals, and academic preparedness (Cabrera & La Nasa, 2000).. Consequently, the factors that influence first-generation students' college choice is the thesis for this study. CUMU is one of the largest organizations of urban metropolitan institutions. The organization was created in 1989 to bring similar organizations together to discuss issues and trends that aligned with the unique mission, challenges, and student make-up of these specific institutions. The CUMU is currently made up of over 100 institutions throughout the U.S. as well as international institutions which enroll over two million students.

Research focused on first-generation students has pointed to several areas to support this group, including college readiness and low self-esteem, financial stability, peer-to-peer support, sense of belonging, and enrollment status (Strayhorn, 2008; Garriott & Nisle, 2018; Tym, McMillion, Barone, & Webster, 2004). These factors are central to the current study's analysis and recommendations and will be discussed in the subsequent sections.

College Readiness/Low Academic Self Esteem

Existing research on first-generation students indicates that this population is typically comprised of students of color from under-resourced K-12 schools (Portnoi & Kwong, 2019; Pascarella et al., 2004). Students from under-resourced schools tend to struggle academically in college, which can lead them to question their pursuit of a college education. Imposter syndrome is related to self-esteem and can lead to poor performance and even attrition; this phenomenon involves self-doubt in abilities in comparison to the majority (Gardner & Holley, 2011). Lack of confidence impacts how first-generation students approach challenges (Ward et al., 2012).

Financial Stability

First-generation students seek higher education for the prospects of better employment opportunities. However, insufficient financial resources result in first-generation students taking reduced course loads, seeking more student loans, or discontinuing their attendance altogether (Cataldi, Bennett, & Chen, 2018). Financial instability also leads to the increased need for students to work. Increased work has shown to negatively impact student involvement in academic pursuits (Engle & Tinto, 2008). Family assets are directly linked to financial resources available to support pursuit of a college degree. First-generation students are typically not able to depend on their parents for financial support; therefore, limited access to finances has led first-

generation students to take on more debt than they are comfortable with (Gardner & Holley, 2011). One recent study revealed that college students graduated with an average of $37,172 worth of debt (Friedman, 2018).

Peer-to-Peer Support and Sense of Belonging

First-generation undergraduate students work more hours, are less likely to reside on-campus, have less involvement in extracurricular activities, and experience less peer interaction outside of academic environments (Pascarella et al., 2004). Pascarella et al. (2004) found that involvement positively impacted critical thinking and overall success of those who were engaged. They also found that interactions with peers outside of the classroom helped to grow students' social capital. Both involvement and peer interactions tended to have a greater impact for first-generation students' success compared to that of non-first-generation students. Furthermore, peer support has shown to provide vital assistance to first-generation undergraduate students even more so than family support (Dennis, Phinney, Chuateco, 2005; Strayhorn, 2008). Related to peer-to-peer support is the concept of sense of belonging. Specifically, first-generation students experience feelings of not belonging on college campuses (Stebleton, Soria, & Huesman, 2011). Garriott and Nisle (2018) state that low sense of belonging impacts first-generation students' ability to locate such resources as counseling, mentorship, and tutoring that can assist them in coping with challenges associated with being the first in their family to attend college.

Enrollment Status/Attrition

Enrollment status has shown to impact the academic success of first-generation students; students who enroll part-time (fewer than 12 credits) tend to take longer to graduate (Pascarella et al., 2004). First-generation undergraduate students are more likely than non-first-generation to enroll on a part-time basis (Ward et al., 2012). Enrollment status and attrition were negatively impacted by delayed enrollment, part-time enrollment, full-time employment, financial dependence, and dependent children (Seay et al., 2008). These risks are known to some degree, yet whether and how institutions of higher education support first-generation students in these areas and how they communicate their support remains unknown.

Expectancy-Value Theory

The current study seeks to explore the communication of support services for first-generation college students at research institutions utilizing the Expectancy-Value Theory as a theoretical framework. The Expectancy-Value Theory is an adaptation of the Atkinson's Expectancy-Value model (Eccles & Wigfield, 2002; Eccles, Adler, & Meece, 1984). The modern expectancy-valuetheory is typically used with adolescents to assess gender differences in choosing STEM programs. Eccles' modification accounts for both the positive and negative experiences that can

impact the choices students make as determined by the expectancy and values associated with a task. Expectancy is tied to the likelihood for success associated with choices as well as to beliefs related to competency. Additionally, expectancy is related to how students perceive others' perception of them and their abilities. Furthermore, the model elaborates that expectancies and values are related to performance, persistence, and task choice (Eccles & Wigfield, 2002). This framework provides a unique lens to critique university websites and is a crucial element for the analysis of this study.

Methods

Content analysis is a systematic qualitative research procedure that is a dynamic methodology allowing researchers to corroborate at least two data sources; data sources can be either print or electronic (Yin, 1994). An effective analysis data must be examined to create meaning, develop understanding, and advance empirical knowledge (Corbin & Strauss, 2008). Content analysis can be conducted on three types of documents: public records, which are official, ongoing records of an organization's activities; personal documents, the personal effects of an individual's actions, experiences, and beliefs; or physical evidence, the objects found within the study setting or artifacts (O'Leary, 2014). Researchers then code content into themes or categories that emerge from the literature and utilize a rubric to grade or score content they analyze (Bowen, 2009). Content analysis is particularly applicable to qualitative case studies generating rich explanations for a phenomenon, event, organization, or program (Stake, 1995). The use of rubrics in content analysis evaluation can increase transparency in research while decreasing subjectivity in the assessment process (Silvestri & Oescher, 2006).

A rubric is a coherent set of criteria that includes descriptions of characteristic parameters for the criteria. An effective rubric can help organizations identify their strengths and weaknesses and objectively assess their services (Chowdhury, 2019). A rubric has three essential features: evaluation criteria, quality definitions, and a scoring strategy (Popham, 1997). Research indicates that rubrics can provide constructive feedback to enhance the learning and development process. Understanding the use of web-based communication, content, and tools is essential in the creation of websites that are indicative of organizational values and beliefs (Nacar & Burnaz, 2011). Because websites enable organizations to create a new, standardized mode of communication whereby end-users can engage with electronic language, their function as a communication vehicle and knowledge organizer requires the institution to facilitate navigational ease of its website (Nantel & Glaser, 2008).

Study Design

With the wealth of information available regarding support services for first-generation students, a rubric was developed to assess institutions in the southeast region of Coalition of Urban and

Metropolitan Universities. It was important to select institutions with the propensity to admit and provide support services to first-generation students. The literature suggests that first-generation students tend to be students of color, come from low-income backgrounds, and seek post-secondary education in urban schools that provide access to college (Portnoi & Kwong, 2019). To narrow the search for this study, the Coalition of Urban and Metropolitan Universities (CUMU) universities were selected to analyze data. CUMU is one of the largest organizations committed to serving and connecting urban and metropolitan universities. It focuses on strengthening institutions that are developing new responses to the contemporary educational, economic, and social issues. These institutions attract first-generation students due to their location, services, and, often, access to support. The 14 selected institutions are CUMU member institutions and were evaluated on the basis of the following criteria:

1. How does the southeastern region of the Coalition of Urban and Metropolitan Universities (CUMU) communicate information about first-generation services on institutional websites?
2. What pathways exist to locate first-generation services on institutional websites?

In addition to the above research questions, the research team utilized a rubric criterion, as shown in Table 1, to conduct a conceptual content analysis to assess university programs and services of first-generation students. This methodological approach was used to make the assessment process less arbitrary and to specify what data to include/exclude in the review in order to best address the research framework. The scoring provided a baseline to evaluate information listed on institutional websites.

Table 1. Website Rubric Criteria

Model (3)	Developing (2)	Foundational (1)
Demonstrates support for first-generation students and clearly states how students are identified to use and access service(s).	Demonstrates support for first-generation, but vague description of how students are identified to use and access service(s).	Demonstrates support for students, but no specific language in reference to first-generation student services.

The rubric categories were established with areas of first-generation student needs identified by the extensive body of research and by the values of the eccles expectancy-value theory. The research team developed this rubric in order to create a framework to specifically assess the needs of first-generation students as they relate to support services and/or resources available on institutional websites.

Considerations of reliability and validity depend on the ability of the researcher to explain the data and provide transparent reasoning about the findings as well as their limits. As such, while the rubric provides a standard measure for the review team, the rubric was not tested for validity

or reliability. Additionally, this research study is grounded in a qualitative procedures; therefore, the results can be categorized as binominal (yes, this information was found, or no, this information was not found) of the selected CUMU institutional websites. The study sample consisted of the southeastern region of the CUMU; these institutions represent seven states in the southeastern United States (Arkansas, Florida, Kentucky, North Carolina, Louisiana, Tennessee, and Virginia) with diverse student populations.

Data Collection

To effectively collect and assess the data, the research team conducted a "first-generation" word search on institutional websites. Data was collected from institutional Home, About, and Financial Aid sections. Hossler (1999) postulates prospective students are interested in searching for specific characteristics of a campus, such as programs/services offered and financial aid. Therefore, websites are critical tools for student research these selections were grounded in the assumption that first-generation students would naturally gravitate to familiar sections of institution websites.

Data collection occurred from May 2019 through July 2019. Collecting the information during this time period, as it follows the spring academic term and precedes the start of the next academic year's fall term, was helpful because up-to-date and semi-static information about a college/university's new and existing programs should be, at that time, posted online, as should requirements for aid for the upcoming year. Each research team member was assigned to individually assess first-generation support services provided by specific institutions from CUMU's southeastern region list. The analysis was based on the institutional definition of first-generation and on services listed, if any. Each researcher utilized the constructed rubric for consistency and to ensure the measurements for convergent validity. This method of assessment allowed researchers to compare findings from the selected websites; this evaluator process allowed side-by-side comparison for deeper analysis and discussion.

Coding and Intercoder Reliability

In order to thoroughly review websites associated with the study, the researchers developed a coding schema utilized for analysis. Of the three researchers, each was assigned and submitted initial codes in accordance with the rubric parameters. Websites were reviewed based upon the following scales provided in the rubric. During individual scoring, members of the team utilized an Excel workbook with different spreadsheets to rate the sites. As a form of trustworthiness, site scores were sent to the study's first author who merged and compiled the scored data (DeCuit-Gunby, Marshall, & McCulloch, 2011). During the compiling of the coded data, if a discrepancy emerged the researchers would review the material together and discuss the coding until a consensus was met. To assess percent agreement the research team drew upon the work of

Lombard, Snyder-Duch, and Campanella Bracken (2006). Overall 14 websites were reviewed in five specific areas, as shown in Table 2. The researchers' scores matched 90% of the time and remaining discrepancies were addressed through a consensus (Lombard et al, 2006).

Results

Because this study was exploratory, the analysis was largely binominal assessment (yes or no) via the rubric. The purpose of this study was to investigate how the selected institutions organize academic and nonacademic support for first-generation college students utilizing the eccles expectancy-value theory, as shown in Table 2.

The study examined pathways forged or communicated via the website to assist first-generation students, with the understanding that this population is expected to start at a disadvantage. Thus, while websites espoused the commitment to assisting first-generation students, relevant information was not always explicitly stated. One major test was to determine whether the institution defined what/who first-generation students are. This simple identifier of a definition provided a baseline for research; in the absence of this information, students may not be aware that they are in fact first-generation. In this case, three of the 14 schools failed to explicitly define first-generation. While this oversight occurred, the majority of the schools received points for their online verbiage, but on average institutions did not explicitly (written on page) discuss services for first-generation students; therefore, on average in the remaining categories received twos.

While the rubric provided an opportunity to assess institutional websites, the analysis indicated that websites may provide a touchpoint for access. However, some institutions relied on additional, non-digital, mechanisms to communicate such information, such as orientations or summer intensive programs. The institutions that did arrange information on their websites also shared demographic information about first-generation students, which provided an opportunity for first-generation students to relate to peers in order to cultivate an informal support system.

The common pathway institutions used was the About section or some iteration of the campus profile. First-generation students could navigate from this portion of the website to connect with or find first-generation resources. Another common pathway from this sample was the Financial Aid section. Of the institutional website sections analyzed by the researchers, Financial Aid often contributed to the assessment not only a definition of first-generation students, but also eligibility requirements for scholarships and other support services. This pathway resulted in a variation of clicks to access the desired information (i.e. no discernible pattern was identified).

Table 2. CUMU First-Generation Rubric Results

Institution	Definition	Attainment (College Readiness/ Low Academic Self-esteem)	Intrinsic (Peer-to- peer support/ sense of belonging)	Utility (Enrollment Status)	Cost (Financial Stability)
Florida Atlantic University	3	3	3	3	3
Florida International University	3	2	2	2	3
Louisiana State University-Shreveport	1	1	1	1	1
Miami Dade College	3	3	3	3	3
University of Arkansas at Little Rock	3	2	1	1	2
University of Louisville	3	3	3	3	3
University of Memphis	1	2	2	3	2
University of North Carolina at Charlotte	3	2	3	2	1
UNC at Greensboro	3	3	2	2	2
UNC at Wilmington	3	2	2	2	2
University of North Florida	3	2	3	2	2
University of Tennessee at Chattanooga	3	2	3	2	1
Virginia Commonwealth University	3	3	3	3	2
Virginia Wesleyan University	1	1	1	1	1

Note: Combined results of research team website content analysis

Additionally, the content analysis revealed that institutions that did not make information about first-generation student services readily available on the Home, About, or Financial Aid pages did, however, rely on TRIO. With this in mind it was helpful for the research team to see themselves as a first-generation student navigating university nomenclature ; higher education may learn that what is clear within the walls of the academe could be confusing for individuals who are unfamiliar to the environment; therefore, institutions should redirect to focus on the end user experience.

For instance, the research team were familiar with federally funded programs such as TRIO, but a first-generation student or family member may not. TRIO are outreach and student services programs designed to identify and provide services for students from disadvantaged backgrounds. TRIO programs are intended to assist low-income, first-generation college students, and students with disabilities to progress through the academic pipeline from middle school to post-baccalaureate programs. These programs are federally-funded and require institutions to officially request funding. These programs could also fall under Student Support Services' national funding.

During the analysis, the research team recognized a consistent pattern wherein institutions primarily focused on four areas of the rubric: attainment (college readiness/low academic self-esteem), intrinsic (peer-to-peer support/self of belonging), utility (enrollment status), and cost (financial aid), which further affirmed the rubric's validity. Websites provided several examples of tutoring and academic support via a full-time staff or a team trained specifically to respond to the needs of first-generation students. Similarly, institutions showcased peer support opportunities via several strategies, including mentoring, student organizations, and living learning communities. Institutions highlighted scholarships and grants specifically funded to assist first-generation students. Financial support, a listed vulnerability of this population, was the one area in the rubric most institutions highlighted, and which featured direct language to communicate information about services for first-generation students.

Discussion

To date, research often approached first-generation students through a deficit-model lens and focused on defining characteristics of first-generation students. Most research dealing with first-generation college students focused on their lack of capital and preparation necessary to succeed in higher education (Rubio et al., 2017). In contrast, this study assessed how 14 urban institutions of higher education communicate the support first-generation college students require to be successful. By using the expectancy-value theory, the research team utilized and offered a different strategy for assessing the experience of first-generation students.

Because many institutions identify first-generation students as a vulnerable population, it is important to effectively communicate to them about resources and services specific to their needs. The institutions in this study showed a great deal of commitment to the student experience and, in many cases, took pride in the services they provided. However, despite the demonstrated need that first-generation students and their families have for information about programs and services critical to their success, our analysis revealed that the information was not always readily present. Institution websites are an effective tool that can be used for students to conduct research, connect to offices/departments, and identify additional support that they need to be successful. Nonetheless, if institutions say they support first-generation students, their commitment to creating websites that clearly communicate resources is paramount.

Additionally, websites are fluid media; thus, they are regularly updated; and some of the content on institutional websites changed during the course of our data analysis. Using content analysis of institutional websites in this regard limits the generalizability of the research findings. While the research team performed an evaluable study the researchers would remind readers the results sought to answer a phenomenon utilizing a non-validated instrument for analysis. A content analysis for a website may be conducted but should be replicated with a validated tool.

Practical Implications

In this era of greater accountability, higher education is constantly responding to the changing educational landscape and to the changing needs of a diverse and dynamic student population. Limited resources and funding may prevent institutions from the ability to develop first-generation specific offices/departments. Notwithstanding the creation of separate services, tapping into the national Student Success Services pipeline may be a strategy to ensure that first-generation students are assisted. TRIO programs are specifically designated to assist this population, and, because this program is nationally established, it provides funding. The First Scholars Program represents another opportunity for institutions to support first-generation students via scholarships. Providing information about scholarship opportunities via websites supports first-generation student transition and retention.

Additionally, a specific focus on first-generation students highlights the many challenges they may experience. Taking into consideration the fact that these challenges suggest first-generation students are underprepared, this narrative is framed as a deficiency model. In the aggregate, however, first-generation students persist at the same rate or similar rates as non-first-generation students (Cataldi, Bennett, & Chen, 2018). For this reason, institutions should consider reframing their approach and the information they provide in order to encompass these students' unique experience and promote this information via the websites. In as such, schools that considered including families in the orientation process or that provided specific information geared to helping students transition boasted higher retention and persistence rates. In this context, families

should be considered an asset to supporting first-generation students through their college career and should be leveraged for the good of the student.

Another practical strategy institutions may consider is to conduct annual website reviews to ensure the existence of a seamless pathway to connect first-generation students to resources. Marketing research suggests the current consumer, in this case students, becomes more vested in their search when there are minimal clicks. Thus, first-generation students need to be able to easily and quickly find and access information. Some institutions in this study provided one a page specifically for first-generation students that linked to all relevant resources to; this page included videos and hyperlinks to other resources on campus. This approach allowed first-generation students to access information in a single location from which they could draw upon a wealth of resources. Such a landing page should take into consideration students' enrollment status, given that the needs of a prospective first-generation student will vary from those of a current student. For instance, prospective students may need information about the admissions process, while a current student may need such support services as tutoring and reapplying for scholarships. Regardless of the first-generation student's status, retention for this population may increase with efficient access to information about programs and services.

The last strategy is probably the simplest. The term "first-generation" is very much higher education nomenclature. Institutions must be keenly aware that students and families may not be aware they are a first-generation, or in some cases students may not have the language skills to include "first-generation" in their initial search. Schools in this study recognized there could be a language gap and provided a glossary of terms, which was one resource that was used to help families. This simple strategy could have a significant impact on the institution's effort to connect with the intended user.

Future Research Directions

This study's results indicate that there is more work to be done in the area of understanding first-generation information collection. The use of websites can indicate an initial strategy to communicate to first-generation students. Additionally, the opportunity to assess institutional pathways is critical. The research team makes the case that institutions should utilize their websites to connect with these students. As more such students enter higher education, the social capital in their network could help direct their search. Therefore, it is crucial for future researchers to consider where the possible touch points to provide information should be located. One consideration is to arm guidance counselors, clergy, and community centers with information about what services are specifically available to first-generation students. While the literature suggests that first-generation students currently rely on these support systems, more research should be conducted as how are these networks interact with institutional information in order to support first-generation students.

Lastly, first-generations have been described both as underprepared and resilient. The unique experiences of first-generation students indicate this population may have emerging considerations that have yet to be explored. Researchers focusing on first-generation students should include them in the conversation. First-generation students are the experts of their experiences and could provide an enriched epistemology or specifically auto ethnographic narrative. This method of collecting experiences can be empowering; it can help researchers identify gaps and, more importantly, to assess the impact and intent. The use of first-generation students' narratives to ensure services are appropriate is encouraged, because engaging first-generation students in the process of identifying their needs demonstrates a commitment to supporting this population and also provides an opportunity for agency. As a result, the lens through which future generations view and assess the effectiveness of institutional websites and resource allocation would provide dynamic and informative narratives.

Limitations

While websites are dynamic tools of communication, the organization of each website was different, which required the research team to be creative in assessing information. For instance, websites may have listed first-generation resources in press releases or presidential state of the university remarks. Therefore, the pathway to extract first-generation was not always readily accessible or identifiable. To maintain consistency in the search, it was important for the research team to emulate search functions of first-generation students and take into consideration that students' search practices may be rudimentary. Lastly, while the primary focus of the study was to specifically identify resources via websites, our study did not take into consideration print resources, such as brochures, view books, or pamphlets. First-generation students and their families may not choose to search in this manner. Subsequently, budget reductions at many institutions necessitate cutting paper methods of communications and relying more heavily on websites. Nonetheless, websites can and should play a crucial role in connecting first-generation students to campus resources.

Conclusion

Many universities accept and enroll first-generation students, and they provide support through a variety of targeted and general services. However, whether first-generation students can efficiently access support services information within a few clicks on a given college or university's website is uncertain. As evidenced by this study, though schools have a wide range of available resources for first-generation students, locating this information sometimes proved to be difficult. Furthermore, identifying support services with the characteristics associated with expectancy value theory can effectively frame the type of information that might be beneficial

for first-generation students. The desire to help first-generation students achieve academic success can provide the impetus for an institution's efforts to optimize first-generation support services communicated through its websites. As Engle and Tinto (2008) noted, first-generation students are likely to leave college after the first year; providing first-generation students with access to targeted information developed utilizing expectancy value theory might mitigate the impact of such a troubling notion.

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