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An analysis of highly-cited scholarship in business and management education: Findings and future agendas

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ABSTRACT

Numerous events have fostered the increased legitimacy of business and management education (BME) scholarship in recent years. These include the rise of the scholarship of teaching and learning (SoTL) expectations in various key BME journals, and new AACSB International – The Association to Advance Collegiate Schools of Business standards regarding pedagogical research, assurance of learning, and teaching impact. An important next step in furthering BME scholarship is exploring the domain's prominent topics and identifying attendant future research opportunities and issues. Using the *TxtViz*® textual cluster analysis software, this paper investigates the content, sizes, and relative positions of the 15 key BME themes identified by Arbaugh et al. (2019) as well as derives Kuhnian-based (1962) implications for the field's future growth and development. In so doing, this study seeks to help scholars gain a finer-grained understanding of the state of the field and identify key domain-level research agenda issues as the BME domain continues to evolve.

1. Introduction

Mature domains have well-defined topics, thus guiding scholarship activity with clearly identified boundaries and approaches (Kuhn, 1962). An established field partially emerges through efforts to periodically review the field, identify important works, and suggest research agendas. In one business discipline example, the *Journal of Management* has produced an annual series since 1984 to inform its scholars on developments and the state of its scholarship, such as leadership and various other topics (cf. Bauer, 2009; Vecchio, 1997). These reviews have become an important guide for management researchers (Feldman, 2003). We believe the same needs and opportunities now exist in the business and management education (BME) field.

We believe that BME scholarship historically has been relegated to "ancillary" rather than "mainstream" status within the academy, which is consistent with Kuhn's (1962, pp. 23–34) view that most work is conducted within an established "normal science" paradigm. It is understandable that scholars who were trained in basic disciplines, such as accounting and management, are likely to consider

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BME work as a questionable endeavor (Arbaugh, 2008; Rynes & Brown, 2011). However, this view results in BME having fewer works than those in other business areas, thereby creating a need to further develop its foundation and domain. This "ancillary" view had been especially strong for institutions affiliated with the AACSB International (AACSB) because for much of the association's history, basic discipline scholarship has been the paradigm for demonstrating faculty knowledge currency. However, we see evidence that this perspective has been changing since about 2000 (Thompson, 2004), culminating most recently with the 2013 AACSB accreditation standard 2, where basic, applied, and learning and pedagogy research are all given important places (AACSB International, 2013).

Another development encouraging BME scholarship is the increasing number of high-quality business journals that are focused on such work. For example, while incarnations of the *Journal of Management Education* (*JME*) and *Management Learning* (*ML*) have existed since the 1970s as lone voices in a wilderness long dominated by basic discipline journals, the 2002 establishment of the *Academy of Management Learning & Education* (*AMLE*) provided its namesake society's official imprimatur on the importance of BME efforts in promoting research that could benefit teaching and learning both inside and outside the classroom—an increasingly important factor for universities and their accreditors (Bailey et al., 2010; Lewicki & Bailey, 2009). The founding of the *Decision Sciences Journal of Innovative Education* (*DSJIE*) in 2003 subsequently added the Decision Sciences Institute's endorsement. These publications joined other prestigious society sponsored journals, such as *Issues in Accounting Education* (the American Accounting Association) in supporting BME work.

The evolution from AACSB's 2003 standards' focus on assurance of learning (AOL) to its 2013 standards of continual improvement with demonstrated impact also provided scholars with a required and systemic rationale for interest in education-related data. Simultaneously, many pedagogically-focused journals began to shift emphasis towards more rigorous research measurement and assessment requirements as part of the emerging Boyer (1990) inspired scholarship of teaching and learning (SoTL) movement. This helped ameliorate longstanding concerns amongst discipline-based scholars that education research was dominated by lower-quality work (Schmidt-Wilk, 2010). Combined, these new norms have helped draw educators into more efforts focused on examining effective BME practices.

All of the above developments have served to increase the mainstream legitimacy of BME research. Solidifying that hard-won legitimacy has become a collective focus of BME journals. In addition to Schmidt-Wilk's (2010) insistence of SoTL practices in *JME*, Arbaugh (2008), then the incoming editor of *AMLE*, gave a powerful editorial voice to the conversation when he spoke of *AMLE*, *DSJIE*, *ML* and *JME* as the "big 4" management education journals. Soon afterwards, Beatty and Leigh (2010) provided a crucial emerging domain review of the specific foci of the acknowledged "big 3" management education journals (*DSJIE* was excluded because it did not begin publishing until 2003). One year later, Rynes and Brown (2011), noting the dramatic increase since 2002 of BME articles that met the "scientifically-based research" criterion of the American Educational Research Association, assessed the legitimacy, with strongly favorable findings, of the same "big 4" journals. Finally, two years later, in another watershed moment in establishing the domain's legitimacy, Currie and Pandher (2013) published their comprehensive rankings of the most influential BME journals. The strong emphasis on high quality SoTL research is now firmly entrenched in the leading BME journals. This is seen in the *International Journal of Management Education's* (*IJME*) longstanding commitment to scholarly discourse (Marriott, 2017) as well as by the recent guidance provided on evidence and methods standards by the current editors of *JME* (Lund Dean & Forray, 2014) and the past editor of the *Journal of Marketing Education* (Bacon, 2016b).

Thus, based on Kuhn's (1962) perspective, we can see that the above events were important in helping BME scholarship change from "ancillary" status to an emerging legitimate domain. However, despite its progress, more hurdles need to be surmounted in its journey to becoming a fully developed field. Perhaps first among these is the imperative to explore the unique BME themes that are receiving the most scholarly attention. This is important because, without such clarity, it is difficult to determine the field's boundaries and the key agenda items that likely will dominate it for at least a generation of scholars. As Kuhn observed, paradigm "mopping-up operations are what engage most scientists throughout their careers" (1962, p. 24). Therefore, establishing the paradigm's parameters becomes a critical task for ensuring its future success. Additionally, it is important to identify the domain's strengths and weaknesses to help determine whether its progress is signaling an imminent transition to a mature stage, or whether it is still unsettled, thus marking continuing immaturity, albeit one reaching adolescence.

Despite our adoption of Kuhn's (1962) field development view, we are aware of criticisms that it may crowd out a diversity of ideas. These criticisms on the need for balance between explorations of new ideas and having a consistent core set of terms, issues, and direction have also been raised by Pfeffer (1993, p. 616), who noted how a balance could improve a field's legitimacy, resource allocations, research efforts, and overall growth. Pfeffer pointed to how more developed fields with questions, issues, and topics that are supported by scholars provide a stable core to attract research efforts and resource allocations. In contrast, fields with less agreement have difficulty attracting attention and resources. Over time, these less developed fields may import ideas that have more consistent agreement from other areas, thus shaping and altering their trajectories, and perhaps even resulting in them being absorbed by more developed fields. Thus, the challenge in an incompletely developed field is less of a tolerance of diversity of ideas than one of its independent existence. Ultimately, a field's long-term health requires a balance that fosters the exploration of both new ideas and an agreed upon core set of issues. Likewise, Bailey (2013) raised a similar point on the need for balance to conform to the norms of the established core in research topics, issues, and methods versus differentiation that could provide room to carve out new topics that are important for a field's long term vitality.

Even when taking into account the aforementioned criticisms, we believe Kuhn's ideas are particularly relevant to the development of the BME field. Thus is due to how he sees scientists theorizing, observing, and experimenting within an agreed paradigm or explanatory framework (Kuhn, 1962, pp. 35–42) and revising existing beliefs based on the ongoing evidence gathering process (Kuhn, 1962, p. 92). Such normal science activities need a common foundation of terms, issues, and ideas (i.e., a paradigm) that are agreed to by the community (Kuhn, 1962, p. 182). When there is increasing evidence that the paradigm is no longer able to effectively explain

the data, a crisis occurs and a paradigm shift takes place (Kuhn, 1962, pp. 152–153). We are witnessing a similar process in BME research, where scholars are increasingly demanding theoretical foundations to guide the discovery and explanation of uncovered data, which is also affecting research directions, methods, and findings discussions. Thus, BME's increasing requirements for theory-guided research and sophistication are consistent with Kuhn's (1962) normal science.

Just as it can be argued that prior BME investigations, such Rynes and Brown (2011) and Currie and Pandher (2013), signaled its emerging legitimacy, three recent studies (Arbaugh et al., 2016, 2019; Beatty & Leigh, 2010) suggest a path for undertaking an important Kuhn (1962) inspired assessment of the domain's current state. All three seek to understand the BME landscape by examining the major themes in its journal articles. Beatty and Leigh (2010) used the *RefViz*® K-means cluster analysis software to study the titles and abstracts of all 363 peer reviewed articles in *JME*, *AMLE*, and *ML* from 2002 to 2005 to determine where those journals possess unique emphases and where they share similar themes. Conversely, Arbaugh et al. (2016) identified the 100 most-cited BME journal articles published since 1970 through a keyword search process using Harzing's *Publish or Perish*® (2013) software, and then examined the legitimacy sources of those articles using Maton's (2000) Specialization dimension of his socially-based Legitimation Code Theory (LCT). Finally, Arbaugh et al. (2019) expanded their original sample to the 250 most-cited articles. While they focused on operationalizing two additional LCT dimensions—Semantics and Autonomy—they also used *TxtViz*® (a later version of *RefViz* employed by Beatty and Leigh (2010) to identify 15 BME topic clusters. Unlike Beatty and Leigh (2010)), their clustering was a secondary activity limited to cluster generation and naming and then noting their positioning along the study's three LCT dimensions.

Being mindful of Kuhn's (1962) exhortation that one must comprehend a field's current condition and key questions before moving forward, we seek to extend our understanding of BME's domain development by taking a deep look at the same 15 clusters identified by Arbaugh et al. (2019). Whereas Arbaugh's et al.'s (2019) study generated the clusters as an intermediate step in service of their exploration of LCT's sociologically-based legitimacy markers, we seek insights by directly investigating the clusters. Specifically, our study is guided by the two following general research questions:

RQ_1: What thematic insights emerge from investigating the content, size, and relative positions of the clusters identified by Arbaugh et al. (2019)?

RQ_2 Using Kuhn's (1962) field development perspective, what are the implications for current and future BME research and cluster development?

By examining these questions, we seek to show thematic areas that have substantial interest and which could be the bases for traditional, and ongoing, BME investigations versus emerging areas that could draw the next wave of research. It is our hope that our findings could guide scholarship over the next several years, much as the annual research reviews that used to appear in the *Journal of Management* (cf., Vecchio, 1997). Further, this study seeks to contribute to BME's ongoing development by extending and expanding the methodological foundations that have been established by the three key prior works in this area (Arbaugh et al., 2016, 2019; Beatty & Leigh, 2010).

2. Data and methods

This study uses the same 250 most-cited BME journal articles published since 1970 that were identified (and manually verified as being within the domain) by Arbaugh et al. (2019) using a *Publish or Perish* (Harzing, 2013) keyword search of specific BME-related terms in *Google Scholar*. The primary data used for their study, and this follow-on effort, is the title and abstract from each of the 250 identified articles.

This study verified and used the same 15 BME streams Arbaugh et al. (2019) identified using the *TxtViz*® textual cluster analysis software against the abstracts and titles of the aforementioned 250 most-cited BME journal articles. Given Arbaugh et al.'s (2019) detailed description of their use of *TxtViz*, we provide only a brief summary below of their methods.

TxtVix employs a K-means analysis to place articles in related-clusters. K-means is a well-established technique, dating to the 1950s, that has objectives similar to exploratory factor analysis except it works well with textual data (Garbade, 2018; Tan et al., 2018; Wu et al., 2015). Garbade (2018) states "K-means clustering is one of the simplest and popular unsupervised machine learning algorithms." He further describes the norm of avoiding preconceived themes or envisaged outcomes, or imposing *a-priori* notions, during the K-means clustering process so that the data can speak for itself: "Typically, unsupervised algorithms make inferences from datasets using only input vectors without referring to known, or labelled, outcomes."

Given K-means' strong "unsupervised leaning" basis and prior *RefVix/TxtViz* studies using software-determined number of clusters in domains ranging from BME (e.g., Beatty & Leigh, 2010) to gambling (e.g., Shaffer et al., 2006), Arbaugh et al. (2019) explored their data using both author-specified numbers of clusters and *TxtViz's* automatic sizing process (which sets the number of clusters as the square root of the number of articles in the data set): the author-specified clusters did not produce more meaningful outputs than those of the default settings. So, in the end, given K-means' conceptual underpinnings, and the lack of a compelling theoretical reason to abandon those foundations, Arbaugh et al. (2019)—and by extension, this current study—relied upon the default clusters produced by *TxtViz*.

TxtViz produces several visual outputs to aid in the analysis of its results. Its primary output is the "Galaxy," which provides a two-dimensional visual map that displays each cluster's centroid (with an icon) and the position of each record [article] (with a dot). Each cluster and record is positioned in the Galaxy according to its relatedness to every other cluster and record. For example, two closely related clusters will appear close together while relatively unrelated clusters will be further apart. The prime benefit of *TxtViz* is its ability to generate statistically-based clusters on qualitative source data. The program's three projection settings for cluster cohesion, cluster area, and cluster spread, which determine how clusters are positioned in the Galaxy, were set to the default parameters.

3. Results

Table 1 below presents each of the 15 identified clusters. This includes the cluster number (1 through 15), its number of records (articles), its title from Arbaugh et al.'s (2019) study, its major terms (including the *p*-value and deviation from a random distribution of each major term over all the clusters), and the number of records in the cluster containing a particular major term. In addition to each cluster's titles, Table 2 presents sample articles from each cluster (where each cluster is also identified as being primary, secondary, or tertiary), presented in order of its distance from the central-most cluster in the *TxtViz* visual display of the results (the Galaxy).

Fig. 1 below presents the Galaxy—*TxtViz's* visual display of the 15 clusters.

3.1. Clusters described by cluster distances in the galaxy

3.1.1. Primary and secondary clusters

Our attempt to answer research question 1 begins by examining Fig. 1, which shows 11 clusters (Clusters 1, 2, 3, 4, 5, 7, 8, 9, 10, 12, and 14) forming the main body in the lower left corner of the Galaxy. Cluster 1 is the most central, with its close proximity in visual order of increasing distance, to Clusters 14, 9, 4 and 8. We collectively refer to these as the five *primary* clusters in the analysis. As noted earlier, while *TxtViz* assigns each article to a cluster, it also places clusters in proximity to one another according to their thematic similarities. Thus, the themes of the articles in Cluster 1 (titled "Teaching Effectiveness"[2]) are likely to be more closely related to the themes in Clusters 14 ("Business Student Ethics"), 9 ("Student Characteristics and Learning"), 4 ("Motivation and Learning"), and 8 ("Future Relevance of Business Schools"), than to those in more distant clusters, such as 3 ("The Business of Business Schools") and 2 ("Experiential/Active Learning"), which respectively appear at the right and left edges of the Galaxy's main body.

A little further away from the primary clusters, but still present in the main body, are the six *secondary* clusters. In visual order of increasing distance from the central-most cluster in the Galaxy (Cluster 1), the secondary clusters are 10, 2, 7, 5, 3, and 12.

3.1.2. Tertiary clusters

Other clusters (6, 11, 13, and 15) are more separated from the main body of the Galaxy and are placed in what we refer to as the *tertiary* clusters. Cluster 11 is below and to the left of the main group. Cluster 13 is placed a significant distance to the right of the main body of clusters. Cluster 6 is placed even further above the main body as Cluster 13 is placed to the right. Finally, Cluster 15 (which is omitted from Fig. 1) is exceptionally far to right of the main group of clusters—approximately three times further away from the main group as Cluster 6 is above the main group. While no firm rules exist regarding interpretation of the Galaxy positions, our conversation from this point forward will treat the main body of 11 clusters, excluding the four tertiary clusters, as the geographic center of the Galaxy.

3.2. Presentation of cluster themes

There are many possible ways to discuss the cluster analysis results that are shown in Fig. 1 and Tables 1 and 2 (e.g., by cluster location or size) as we continue our investigation of research question 1. We present our theme results below according to a positioning distance approach from the Galaxy's central cluster (Cluster 1) for the sake of consistency and to formally address some of the spatial data presented by the Galaxy. Thus, our results below will first explore the five primary clusters (1, 14, 9, 4, and 8). Next, we present, in cluster distance order, three of the sufficiently large secondary clusters (10, 2, and 3; each of which contains more than 10 articles). Of the remaining secondary and tertiary clusters, we will briefly explore the three small clusters (5, 7 and 13; each of which contains six or fewer articles) and the four single article clusters (11, 12, 6, and 15).

3.2.1. Primary cluster 1: teaching effectiveness (33 articles)

This cluster is defined by *TxtViz* with the major terms *educate*, *student*, and *learn*. Its articles are typically focused on empirical studies of instructional approaches and innovations, with a stronger emphasis on "instructor action" and/or "comparison of instructors/contexts" than Clusters 4 ("Motivation and Learning) and 9 (Student Characteristics and Learning"), which are described below. This cluster's works employ a variety of methods, such as studies conducted at multiple institutions, using multiple instructors, or in different courses. Also, of note, eight articles in this cluster appeared in management journals, while only two appeared in economics and accounting journals, and one in a marketing journal. Another differentiator of this cluster is that at least 10 of its articles are business school-based studies that were published in general education journals, such as *The Internet and Higher Education* (Arbaugh et al., 2009) and *T.H.E. Journal* (Gagne & Shepherd, 2001). This cluster is also notable for its number of international context studies.

3.2.2. Primary cluster 14: business student ethics (15 articles)

This cluster is defined by *TxtViz* with the major terms *student, ethics,* and *ethical.* Its articles focus exclusively on student ethical development from a variety of perspectives. Eight articles appear in the *Journal of Business Ethics*, while four appear in accounting education journals. The remaining three articles each had one appearance in marketing, management, and information systems

[2] Note: The cluster titles used through this paper are adopted directly from Table 1 of Arbaugh et al. (2019).

Table 1
Articles per Cluster, Cluster Titles, Major Terms, and Descriptive Statistics (n = 250 article titles & abstracts).

Cluster	# of articles	Arbaugh et al. (2019) Cluster Title	Major Term 1	Major Term 2	Major Term 3
1	33	Teaching effectiveness	*educate* n = 32 p = 0.00000 dev. = 0.36364	*student* n = 30 p = 0.00018 dev. = 0.30303	*learn* n = 22 p = 0.01352 dev. = 0.21212
2	21	Experiential/active learning	*learn* n = 21 p = 0.00000 dev. = 0.52381	*educate* n = 16 p = 0.13118 dev. = 0.14286	*management* n = 15 p = 0.00152 dev. = 0.33333
3	21	The business of busines schools	*business* n = 21 p = 0.00000 dev. = 0.57143	*school* n = 19 p = 0.00000 dev. = 0.66667	*management* n = 8 p = 0.62823 dev. = 0.00000
4	35	Motivation and learning	*learn* n = 35 p = 0.00000 dev. = 0.54286	*student* n = 30 p = 0.00174 dev. = 0.22857	*environment* n = 16 p = 0.00002 dev. = 0.31429
5	6	Theoretical/IS models of online learning	*student* n = 4 p = 0.74101 dev. = 0.00000	*structure* n = 4 p = 0.00148 dev. = 0.50000	*process* n = 4 p = 0.03452 dev. = 0.50000
6	1	Web-based conferencing	*interact* n = 1 p = 0.10400 dev. = 1.00000		
7	6	Leadership development	*development* n = 5 p = 0.00382 dev. = 0.66667	*management* n = 4 p = 0.14278 dev. = 0.33333	*program* n = 3 p = 0.11417 dev. = 0.33333
8	36	Future relevance of business schools	*educate* n = 33 p = 0.00006 dev. = 0.30556	*management* n = 31 p = 0.00000 dev. = 0.50000	*business* n = 19 p = 0.16060 dev. = 0.08333
9	38	Student characteristics of learning	*student* n = 38 p = 0.00000 dev. = 0.39474	*business* n = 19 p = 0.24646 dev. = 0.07895	*college* n = 13 p = 0.00059 dev. = 0.21053
10	32	Entrepreneurship education	*entrepreneurship* n = 30 p = 0.00000 dev. = 0.78125	*educate* n = 30 p = 0.00005 dev. = 0.31250	*entrepreneur* n = 23 p = 0.00000 dev. = 0.59375
11	1	Gender and ethics	*structure* n = 1 p = 0.10400 dev. = 1.00000	*institute* n = 1 p = 0.10400 dev. = 1.00000	*future* n = 1 p = 0.13200 dev. = 1.00000
12	1	Emotional intelligence in teams	*process* n = 1 p = 0.24400 dev. = 1.00000	*management* n = 1 p = 0.37200 dev. = 1.00000	*behave* n = 1 p = 0.11600 dev. = 1.00000
13	3	Economics education	*undergraduate* n = 3 p = 0.00191 dev. = 1.00000	*economy* n = 3 p = 0.00078 dev. = 1.00000	*survey* n = 2 p = 0.03482 dev. = 0.66667
14	15	Business student ethics	*student* n = 14 p = 0.00722 dev. = 0.33333	*ethics* n = 13 p = 0.00000 dev. = 0.80000	*ethical* n = 12 p = 0.00000 dev. = 0.73333
15	1	Clickers in BME	*undergraduate* n = 1 p = 0.12400 dev. = 1.00000		

journals. This smallest cluster in the primary set and is unique in focusing on student attitudes and behaviors as related to the ethics perspective.

3.2.3. Primary cluster 9: student characteristics and learning (38 articles)

This cluster is defined by *TxtViz* with the major terms *student*, *business*, and *college*. Its articles have a unique focus on various student characteristics and associated classroom and/or learning performance. What is immediately evident is that the scholarship in this

Table 2
Listing of clusters by increasing distance from the central cluster, cluster type, and sample cluster articles.

Cluster #	Cluster Type (i.e., Primary, Secondary, or Tertiary)	Cluster Title from Arbaugh et al. (2019)	Representative Cluster Articles
1	Primary	Teaching effectiveness	• Arbaugh (2000) • Gagne and Shepherd (2001) • Ponemon and Glazer (1990)
14	Primary	Business student ethics	• Armstrong et al. (2003) • McCabe and Trevino (1995) • Ritter (2006)
9	Primary	Student characteristics of learning	• Bacon et al. (1999) • Durden and Ellis (1995) • Wojciechowski and Palmer (2005)
4	Primary	Motivation and learning	• Alavi (1994) • Proserpio and Gioia (2007) • Young (2005)
8	Primary	Future relevance of business schools	• Cunliffe (2004) • Leavitt (1989) • Rubin and Dierdorff (2009)
10	Secondary	Entrepreneurship education	• Gibb (1987) • Johannisson (1991) • Kuratko (2005)
2	Secondary	Experiential/active learning	• Kayes (2002) • Kolb and Kolb (2005) • Vince (1998)
3	Secondary	The business of busines schools	• Bennis and O'Toole (2005) • Gandz and Hayes (1988) • Pfeffer and Fong (2002)
5	Secondary	Theoretical/IS models of online learning	• Aviv et al. (2003) • Saadé and Bahli (2005) • Silver et al. (1995)
7	Secondary	Leadership development	• Adler (2006) • Boyatzis et al. (2006) • Ely et al. (2011)
13	Tertiary	Economics education	• Becker and Watts (2001a) • Becker and Watts (2001b) • Siegfried et al. (1991)
11	Tertiary (one article)	Gender and ethics	• Ameen et al. (1996)
12	Secondary (one article)	Emotional intelligence in teams	• Wolff et al. (2002)
6	Tertiary (one article)	Web-based conferencing	• Warkentin et al. (1997)
15	Tertiary (one article)	Clickers in BME	• Elliott (2003)

cluster is well-represented by almost every business discipline including economics, finance, accounting, management, marketing, operations management, and entrepreneurship. This cluster also explores characteristics-performance relationships across a wide variety of contexts and topics, such as undergraduate, graduate, online, and student teams, to name a few.

Many of the articles in this cluster are studies that explore an independent variable's relationship with a dependent variable. Classic student demographic characteristics (e.g., age, gender, or GPA) amongst a host items, such as personality measures and previous topic experience, are used as independent variables. Likewise, outcome variables differ significantly, ranging from student satisfaction and ethical behavior to more commonly assessed items such as course grades and increased knowledge of course topics. Compared to Cluster 4 ("Motivation and learning") below, the articles in this cluster spend comparatively less time exploring specific instructional techniques or innovations as treatment or moderating variables.

3.2.4. Primary cluster 4: motivation and learning (35 articles)

This cluster is defined by *TxtViz* with the major terms *learn*, *student*, and *environment*. When compared to Cluster 9 above, its articles have a much stronger focus on the learning environment and how instruction and course design may be altered to improve student success. In short, instructors and their impact/influence in teaching is much more observable within these articles. Variables like student motivation often appear, as with Young (2005), who explored the relationship between instructor, learning, and performance climates and the effects on student extrinsic and intrinsic motivation (among other variables) in a variety of marketing courses. Additionally, Cluster 4 represents an umbrella of treatments, but three topics—technology in education, the effective design of online and hybrid courses especially compared to face-to-face courses, and the role of student learning styles in course design and delivery—emerged as distinct subthemes. We also note that articles are not necessarily "mutually exclusive" to one of these subthemes, such as Proserpio and Gioia (2007), who explored various ways technology tools could be used to accommodate the learning styles of today's "virtual generation" students.

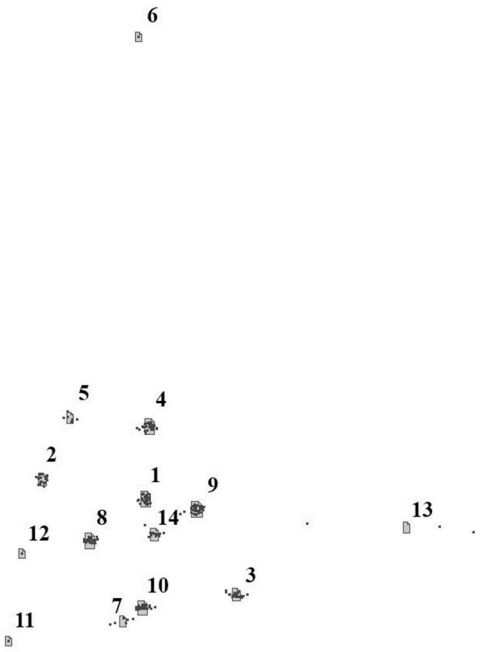

Fig. 1. The *TxtViz* galaxy displaying the 15 identified clusters of the 250 most-cited BME journal articles.
Note: The single article Cluster 15 is not included in the Galaxy image due its placement to the far right and slightly above Cluster 13.

3.2.5. Primary cluster 8: future relevance of business schools (36 articles)

This cluster is defined by *TxtViz* with the major terms *educate*, *management,* and *business*. Its articles have a unique focus on identifying the bases of student knowledge and development that various authors believe business schools seem to be under-emphasizing or paying insufficient attention.

The cluster also contains a host of other articles either assessing business education from a critical theory, or postpositivist perspective, or advocating for more critical theory training for business students. Likewise, some of the key early works advocating for teaching more entrepreneurial thinking and entrepreneurship education appear here, as well as articles advocating for teaching design thinking and evidence-based management. Finally, several articles advocate for greater attention to developing the "whole person" in business education, including arguing for greater emphases on spirituality, corporate social responsibility and sustainability, moral development, and professionalism.

While many of the articles in this cluster have a primary, but not exclusive, focus on "what business schools need to be doing," several attempt to assess "why" this is not happening.

3.2.6. Secondary cluster 10: entrepreneurship education (32 articles)

This cluster is defined by *TxtViz* with the major terms *entrepreneurship*, *educate*, and *entrepreneur*. Its articles are exceptionally focused on entrepreneurship education. Overall, these articles map the emergence and growing importance of entrepreneurship education, with a focus on developing entrepreneurship programs and examining the ability of such programs to motivate students in entrepreneurship activities and becoming successful entrepreneurs. Remarkably, the articles in this cluster reflect a clear "building the case for entrepreneurship education in its early years," which has been followed by later articles which have either engaged in systematic assessments of the achievements and challenges of the field and/or providing guidance for improving entrepreneurship education.

3.2.7. Secondary cluster 2: experiential/active learning (21 articles)

This cluster is defined by *TxtViz* with the major terms *learn*, *educate*, and *management*. Its articles have a strong emphasis on experiential and active learning. It contains foundational works regarding some long-used engaged learning techniques such as the case method and the use of film. A large number of the cluster's articles pertain to David Kolb's influential experiential learning theory (ELT). Likewise, Kayes (2002) extends Kolb's theory and reconceptualizes the learning process within the context of social action to point out how action, cognition, critical reflection and other experience-based approaches to management learning could be brought to life in management learning processes.

Even articles that initially do not appear to "fit" in this cluster, such as the foundational online/technology-mediated learning works, can be understood in terms of the initial questions they raise about student engagement and success in online environments.

3.2.8. Secondary cluster 3: the business of business schools (21 articles)

This cluster is defined by *TxtViz* with the major terms *business*, *school*, and *management*. Its articles are often critical assessments of how business schools conduct their business, with a strong emphasis on their operational issues. While this cluster may have some similarities with Cluster 8 above ("The Future Relevance of Business Schools"), the primary focus in this cluster is the business school as an enterprise (both individually and as an industry), whereas Cluster 8 is much more focused on "missing/underdeveloped" curricular issues and student skills/abilities.

Other articles in the cluster take a critical look at USA business schools and their role in the world's higher education market.

3.2.9. Small clusters 5, 7, and 13 (15 articles total)

Three of the remaining clusters (Clusters 5, 7, and 13) are small, each ranging in size from six to three articles. Therefore, we will only summarize them briefly below, from the largest to smallest, as they are located on the periphery, or outside, of the Galaxy's main body of clusters.

Cluster 5 (titled "Theoretical/IS Models of Online Learning" with major terms *student*, *structure*, and *process*) contains six articles. Five articles are from the information technology/systems field and focus heavily on building and or testing theoretical models for technology use and/or acceptance in teaching and learning.

There are six articles in Cluster 7 (titled "Leadership Development" with major terms *development*, *management*, and *program*). These articles examined various, and often cutting edge issues at the time of their publication, leadership development approaches and topics that are important in sustaining leadership and performance effectiveness.

Finally, Cluster 13 (titled "Economics Education" with major terms *undergraduate*, *economy*, and *survey*) contains three articles that revolved around college economics teaching methods and approaches from 1995 to 2000.

3.2.10. Single article clusters 6, 11, 12, and 15 (4 articles total)

Four of the clusters identified by *TxtViz* contained only a single article. These articles and related clusters (Cluster 6, "Web-based Conferencing"; Cluster 11, "Gender and Ethics"; Cluster 12, "Emotional Intelligence in Teams"; and Cluster 15, "Clickers in BME") are presented in Table 2.

4. Discussion

The BME field has undergone a rapid expansion and maturation process during the past two decades. This is seen in 92 of the data set's highly-cited articles being published between 1978 and 1999, with an additional 152 appearing since 2000—an over 150% increase. One of the most important aspects in this growth is the increased legitimization of the field as discussed in our literature review. This process has drawn new scholars into the BME domain, but who have typically been trained in the basic business disciplines and have had to learn and adapt new theories, literatures, and research methods, amongst others (Bacon, 2016a; Hwang et al., 2019).

As Kuhn (1962) reminds us, the route away from an old paradigm towards establishment of a new paradigm (in this case, the emergence of SoTL in business schools as a legitimate, and necessary, venture) that will operate as "normal science" requires extensive foundation building, including having shared theories, obtaining group commitments, and establishing agreed upon procedures. While Arbaugh et al.'s (2019) work identified the BME research streams used in this study, their LCT-based investigation focused on assessing the clusters using sociologically-based legitimacy measures (e.g., autonomy, semantics), which, by design, limited its ability to organically explore their relative thematic positions and stories. Thus, the following explores the Kuhn-inspired (1962) research question 2 by proffering observations that emerged from the above delineation of clusters. These first include highlighting some broad patterns and issues in the more established BME topics in the primary clusters versus the emerging topic-focused secondary clusters. We then offer observations regarding the importance of agreement on topics, issues, and foundational requirements for stable paradigm development.

4.1. Initial cluster-derived observations

4.1.1. Primary clusters

The *TxtViz* cluster results present a number of interesting insights. The first is that even though the program's analysis is generated through an automated process, it was able to uncover what we intuitively know to be important BME research areas. The primary clusters are firmly focused on various aspects of classroom learning—whether the emphasis is on what instructors are doing in class and how well they are doing it, what motivates students to learn, what helps students to learn and how well they learn, or even the skills and competencies that appear to be missing from business school curricula. Second, these primary clusters account for nearly 63% of the data set's 250 most-cited BME articles. From a Kuhn (1962) perspective, they are stable core clusters that attract the most research attention, and their thematic closeness indicates that scholars have developed a common language and terminology. Despite longstanding apprehensions in the BME community that the nature of its scholarship, especially outputs involving classroom exercises and activities, suffers from a "lack of citations," what emerges from this analysis is that a core group of these types of articles has garnered both significant citation attention and the beginnings of paradigmatic cohesion.

4.1.2. Secondary clusters

Next, *TxtViz's* identification of the secondary clusters is simultaneously fascinating and concerning. As we noted, these clusters do

not occupy the same thematic space as their primary counterparts (which all seem to be gravitating around a meta idea). Consequently, these secondary clusters are somewhat independent, and separated, from the large, complex, and somewhat related conversations in the primary cluster. Indeed, an examination of the three larger secondary cluster topics—entrepreneurship education, experiential/active learning, and the business of business schools—appears to justify both our fascination and concern about their uniqueness. While all of them have garnered attention over the past several decades, their Galaxy map positioning still places them as "secondary" BME research topics. We suspect that this may be due to differing reasons for each cluster.

First, the entrepreneurship education cluster appears to be remarkably unified and cohesive in its work and themes, which leads us to conclude that the cluster ultimately may be one that is self-contained by design, for better and for worse (and given the rapid ascension of entrepreneurship programs in the past several decades, this separation may not be of great import to its members, who collectively appear to be pursuing a very specific research growth agenda).

Next, we are more intrigued about the "secondary" status of the experiential/active learning cluster. The message that appears to be derived from this cluster is that while it is well-known within BME (with 21 highly-cited articles), research attention has been unable to elevate it to primary cluster status (typically with more than 30 articles). While we are reticent to speculate why it is not more prominent, we are worried that somehow a lack of attention to a wider range of theories in this cluster might be self-limiting, thus accidentally turning away potential cluster scholars or overlooking other important works. For example, two concepts—Kolb's (e.g., Kolb & Kolb, 2005) well-regarded experiential learning theory and student learning styles—occupy prominent places within this cluster, despite the existence of other similarly respected experiential/active learning theories and sustained conceptual and empirical concerns about "teaching to" learning styles (e.g., Cassidy, 2004; Kirschner & van Merriënboer, 2013).

The third of the secondary clusters—the business of business schools—is also equally puzzling to us. On the one hand, its conversation and its most salient elements, especially those who view the entire enterprise with a critical eye, are likely to be familiar to almost any business school employee. On the other hand, large portions this cluster's assessments appear to be engaging in what Bunch (2020) calls "solution aversion" or to be offering solutions that are mostly aimed at elite research institutions (Fornaciari & Arbaugh, 2017). We believe the issues raised in this cluster need a broader scope so as to draw interest from all scholars, regardless of their affiliations. The other secondary clusters ("Theoretical/IS Models of Online Learning," "Leadership Development," and "Economics Education") address unique themes that have garnered substantially less attention. Overall, the secondary clusters are further away from the adjacent topics and positioning of the primary clusters on the Galaxy map and, with the exception of the fairly large entrepreneurship education cluster, generally contain fewer articles. Thus, a key task for scholars focusing on secondary cluster topics will be to broaden their research bases and appeal while simultaneously building common foundations.

From a Kuhnian (1962) perspective, we believe that the secondary clusters offer a different set of insights regarding the state of BME research. Compared to their primary counterparts, these clusters are very focused in scope and may, in many instances, have achieved some initial paradigmatic coherence. However, they may also be engaging in self-limiting behaviors which limits their ability to garner more interest from the larger BME community.

4.2. *Potential research agenda action items based on the cluster-level view of BME*

Finally, based on the above results, we offer some suggestions for the next stages of the overall BME domain-level research agenda. We do not pretend for it to be comprehensive, but rather our efforts are an attempt to identify some of the key actions that need to be taken based on the information that emerged from our preceding analysis of the clusters.

4.2.1. *A need for more systematic scholarship to decrease fragmentation*

As we noted earlier, even with 15 clear clusters identified by *TxtViz*, it is evident that the 11 primary and secondary clusters still exhibit some fragmentation in topics, issues, methods, and theoretical foundations. However, the variety that is the source of their initial vitality also appears to be inhibiting the coalescing needed for further paradigm establishment (Kuhn, 1962). As long as a domain contains significant fragmentation, it will be difficult to arrive at the widely generalizable findings needed for a normal science paradigm. While there is some coalescing on traditional classroom topics, as seen within the primary clusters, agreement appears to be more elusive within the secondary clusters. The ability of the secondary clusters to build common foundations and to broaden their research bases for wider interest will help the whole BME field move further along the normal science paradigm. This, in turn, will enlarge the common stable core which could attract resources into the field for further development (Pfeffer, 1993).

Thus, we recommend that BME scholars conduct more systematic reviews of specific cluster ideas, engage in state of the field assessments, and perform meta-analysis type work to begin coalescing the various topics and approaches within the domain. Just as the *Journal of Management* used to publish an annual issue dedicated to reviewing one aspect of its field, we believe that numerous topics and approaches in BME are ripe for such assessment. However, it currently appears that only entrepreneurship (Solomon, 2007) and economics (Becker & Watts, 2001a) education routinely engage in these types of activities. Even more surprisingly, only one meta-analysis, albeit one more than 20 years old, is present in the data set (Borkowski & Ugras, 1998). We are encouraged that journals like *JME* are now publishing "domain reviews" on various topics (such as the Van Buskirk et al. (2018) review of poetry in management education) and we hope that other BME journals follow suit with similar approaches.

4.2.2. *A need for more international studies*

It is evident from the preceding analysis that significantly more international context is needed in BME scholarship. Other than a few Cluster 1 articles, an international dimension is relatively absent from the data set. A closer look at authors in this study's data showed 76% were from USA institutions, with others from Europe (6.7%), UK (4.8%), Canada (3.8%), Australia/New Zealand (4.2%),

Asia (2.1%), and elsewhere (2.3%). We recommend that scholars engage more with authors from nations that have lower BME research activity, as differing country, cultural, and social contexts could lead to new research questions and widen the common stable core of research findings. This effort will necessarily be a function of scholars working in non-USA-based contexts, international and USA scholars establishing research partnerships, and the commitment of journals and conferences to explicitly support and promote these types of studies. In some notes of optimism, we are seeing internationally-focused journals taking the lead in bringing this to fruition. For example, in recent years *IJME* has published articles regarding collaboration and cooperation skills in South Africa (Ronnie, 2017), student motivation (Kashif, Ayyaz, Raza, & Hamid, 2013) and instructor feedback (Kashif, ur Rehman, Mustafa, & Basharat, 2014) in Pakistan, and student entrepreneurial intentions in Vietnam and the Philippines (Tung, Hung, Phuong, Loan, & Chong, 2020). We are also pleased that some traditionally USA-focused publications, such as *JME*, have also begun to address this need through its recently created "Instructional Change in Context" section (Lund Dean & Forray, 2015).

4.2.3. A need to move beyond our comfort zones with certain ideas and theories

Despite well-known empirical and conceptual issues with student learning styles theories, and the concurrent problematic pedagogical advice, they are often presented fairly uncritically within the literature (see Cassidy, 2004; Kirschner & van Merriënboer, 2013). In a slightly different vein, while Kolb's experiential learning theory (Kolb & Kolb, 2005) is a foundational BME concept, its towering stature over the field may have the unintentional consequences of preventing scholars from identifying and using other theories that may be more suited to the unique needs of their research. Part of the solution to overcome the domain's tendency to default to "using what is comfortable" will be scholars' efforts and journals' willingness to deliberately include ideas and models that have drawn less attention into their research. Hawk and Shah's (2007) work is an excellent example of an article that both presents and assesses multiple models and examines scholarship from outside traditional BME outlets (likewise, Cluster 1 contains several BME articles that were *published* outside traditional BME venues).

4.2.4. A need for more theoretical development and testing of our teaching and learning activities

We noticed that many of the articles in Cluster 5 ("The Theoretical/IS Models of Online Learning") were strongly theory-guided (primarily the Technology Acceptance Model) approaches to the design and delivery of online learning (e.g., Saadé & Bahli, 2005; Silver et al., 1995), but similar theory-action approaches are much less present in the other clusters. While this study's data set contains numerous lauded (and by definition highly-cited) studies, they too often are works where ideas are developed, implemented, and then analyzed, but not strongly guided by existing theories. This is particularly problematic for the primary clusters in the main body of the Galaxy, which we believe partly accounts for the significant amount of fragmentation noted earlier. Therefore, we recommend that BME scholars become more intentional about applying (or if necessary, developing) relevant theories in their research. As we recommended previously, in addition to looking towards relevant BME and basic business discipline theories, we also suspect that this recommendation will involve BME scholars seeking the theories and wisdom of disciplines outside the business school, such as education, psychology, and sociology, to name just a few.

4.2.5. A need for more "across" studies

Perhaps one of the most striking insights from this investigation is the data set's comparative lack of "across" studies (e.g., across course sections, instructors, courses, departments, institutions, national contexts, etc.). However, we also note how impactful these types of studies can be for domain development, such as Arbaugh's (2000) seminal study. This is especially surprising, given that the rise of AOL processes for AACSB schools in the early 2000s should have well-positioned those institutions for designing and conducting those types of works. However, given the long timeframes inherent in the emergence of AOL, the tooling up of business schools to manage those processes, and the emergence of BME-focused scholars, we suspect that accredited business schools are beginning to acquire, and build, this type of assessment data. Therefore, we recommended that scholars begin to proactively engage in the collaborative partnerships that will be necessary to publish this type of work if they have not already begun to do so. Once again, without these types of studies, BME is likely to become stuck in an "unsettled paradigm mode" mode because it will not be producing work that can be widely tested and replicated.

4.2.6. A need for more critical assessments

Somewhat counter to the above, given the intensely human, and often personal, aspects involved in BME and SoTL work, we could not help but notice that a significant amount of BME research is "positive" without the attendant, and we believe necessary, identification and exploration of the assumptions, downsides, and risks of our work. While a strong "critical theory/postpositivist" subtheme exists in the data set (especially in Cluster 8), those articles are a small percentage of the overall total. Thus, while a not-insignificant number of people are aware of this research, with Cunliffe's (2004) work being amongst the most well-known, we believe that a more critical tone (not necessary a critical theory or postpositivist approach) has yet to become an integral part of the domain's work. Again, this ability for self-critique is a key element in building and maintaining a normal science paradigm. We recommend that scholars should explicitly anticipate and address the "critical" aspects of their projects and duly report them versus ignoring them. In this respect, we laud works like Chory and Offstein's (2017) provocative exploration of the potential risks of "getting to know our students as people" as an example of more of what we believe the field needs. We encourage all BME conferences and journals to adopt processes for supporting authors in this aspect of their scholarly endeavors.

5. Limitations and future directions

This study has verified the usefulness and procedural portability of the *TxtViz* software in aiding in the uncovering and analyzing themes from article titles and abstracts. This class of software has been used extensively by researchers in other disciplines, but these techniques have yet to be widely used in the BME field with the exception of Beatty and Leigh (2010) and Arbaugh et al. (2019). The emerged primary and secondary clusters have similarities to those of Arbaugh et al.'s (2016) smaller sample of ad hoc classified groups where distance learning/online education, entrepreneurship education, ethics education, and critiques of business schools were also identified as domains. These consistencies support the validity of the use of *TxtViz* and similar software to insightfully identify themes from abstracts and titles.

It should be further noted that the paradigmatic issues BME currently faces are by no means unique to the field. Therefore, our findings should neither be limited to or constrained by its original parameters and future work could benefit from the lessons of other disciplines. For example, in looking at the nursing education field, authors such as Romyn (2001), Whall and Hicks (2002), and Stanley and Dougherty (2010) have all discussed ways in which entrenched educational paradigms have stifled further research efforts to expand upon and explore other existing knowledge bases and approaches. While these issues may be placed on the other end of the developmental spectrum, where researchers struggle to dismantle long-established yet outdated educational paradigms, the fundamental difficulties remain largely similar to those we currently see in the BME field—that is, how do researchers coalesce around a new developing paradigm while addressing opposition to or dismissal of their work?

There are also limitations in this manuscript. First is our adoption of the 250 most-cited BME journal articles from Arbaugh's and colleagues' (2019) study. While the use of their data enables consistency in application and assessment to a known set of articles, thus building an integrated conversation, it also means we bypassed the opportunity to examine a larger number of articles: an expanded look could have potentially reshaped the identified themes. Nevertheless, we have some confidence that since Arbaugh et al. (2019) indicated a levelling off of citation impact after the 250 articles, simply adding more articles may not serve to materially alter what *TxtViz* has identified as the *key themes*, and perhaps more importantly, it would not have impacted this study's larger goal of identifying a BME's domain-level research issues based on the insights from analyzing a large number of said works.

Another potential limitation is the use of the same *TxtViz*-default parameters and number of clusters employed by Arbaugh et al. (2019). The program's settings are designed to optimize the process of minimizing the distance between similar articles and maximizing the distance between clusters, and manual adjustments produced little meaningful differences for Arbaugh's team (2019). Although we took the tried and tested route that enabled us to efficiently build directly off published research (and for future studies to be able to engage in replicable processes), it is possible that untested changes may have produced differing results. Ultimately, our decision was to let the data continue speak for itself without imposing our *a-priori* or *a-theoretical* notions of what topics should look like and which articles should constitute each area.

6. Conclusion

This paper explored a set of topical clusters, emerging from a statistical analysis of BME's 250 most-cited articles, by using Kuhn's (1962) framework to help us understand the domain's paradigm development. While we build upon the foundation established by Arbaugh et al. (2019), our use of *TxtViz*® rather than LCT has allowed us to identify the content, size, and relative position of thematic clusters within the BME research field as they present themselves, without pre-imposed orienting dimensions. The results highlight the needed balance of a stable core that could garner concerted research efforts and resources to grow the field versus having a broad enough scope that allows for experimentation of new ideas and topics to ensure long-term vitality (Pfeffer, 1993). Thus, we see that the identified primary clusters represent the stable core of traditional BME domain issues and encompass a majority of its research. Conversely, the identified secondary clusters have the potential to capture more interest once additional work is done to solidify agreement on issues and foundational elements.

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