Managing in turbulent times: The impact of sustainability in management education on current and future business leaders

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Abstract

During modern times of economic and political turmoil, we ask how we should be educating current and future business leaders to navigate periods of global turbulence. The paper suggests that firstly, undergraduates (future managers) and executive MBA students (current managers) need sustainability embedded in their management education because both groups believe that the global supply chain practices have contributed to global turbulence and that sustainable supply chain actions could help to reduce that turbulence. Secondly, that exposure to supply chain sustainability examples in management education increases global awareness and empathy in current and future managers. Thirdly, it is suggested that a gender balance is required for improved sustainability decision making. Lastly, it is found that direct facilitation by an instructor is not required for threshold learning and that it can occur exclusively through self-reflection. The overarching contribution of the paper is that rather than viewing economic, environmental, social and political turbulence as external factors that managers must simply navigate, supply chain sustainability education enables managers to connect how their global supply chain decisions can either intensify or reduce the turbulence.

Keywords: sustainable supply chains, management education, turbulence, threshold learning

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1. Introduction

Global economic turbulence (e.g. conflict, confusion or change) and political uncertainty characterise the business environment in which firms operate (Anderson et al., 2018). For example, extreme political candidates are increasingly gaining popularity; international alliances and trading blocs are beginning to fragment; developing economies have seen growth decline; and instability and civil war in the Middle East is rife. The sustainability lens could contribute some answers to the question ‘how should university educators be helping business managers learn to deal with turbulent times?’

The economic, political, environmental, and social turbulence that is currently occurring in the world has been heightened by the globalization of supply chains over the past 20 years which has contributed to some of the turbulence (Rodrik, 1998; Dubey et al., 2017). This paper posits that the development in sustainable supply chain (SSC) management might actually help to reduce some of the turbulence. The research aimed to investigate to what extent current and future business managers believed in the potential connections that are being noticed between global supply chain activities, sustainability, and turbulence. Such results could be valuable in guiding the evolving design of supply chain sustainability content within future business programs. Following the call by Nonet et al. (2016) to change business education to encourage responsible management, this paper argues for the necessity of integrating sustainability values in higher education (HE), specifically in management education - forthwith referred to as sustainability in management education (SIME).

Institutions that drive business behavior, such as universities, have a part to play. For example, the HE sustainability sector is viewed as a significant force for change in societies, through the education provision it offers to future professionals and leaders in

all sectors (Mulà et al., 2017). HE significantly contributes to building the capacity of future generations to deal with real-world problems such as sustainability issues (Barth et al., 2014). Moreover, universities are under pressure to be more relevant, particularly in the supply chain management (SCM) area as commercial innovations in data analytics, additive manufacturing, autonomous vehicles and digital ledger technologies develop. It follows that employees will need to be able to thrive in unpredictable environments caused by technological innovation and legal and geopolitical changes, and will require lifelong learning skills for fast adaptation (Erturgut, 2011). Preparing students for employment in volatile settings is especially challenging since graduates require knowledge of the latest trends and research findings in addition to the intellectual rigor and practical skills needed to function effectively in the workplace generally (Gammelgaard and Larson, 2001; Sohal, 2013).

The role of business managers is argued to be a crucial social activity (Khurana and Nohria, 2008), with bad management blamed for damage to society and business schools castigated for poorly educating managers (Amann et al., 2011). Yet business education has also been praised as a potential solution to societal challenges, a force for good and for the transformation of managerial as well as business conduct (Painter-Morland, 2015). This duality of purpose and outcome places significant emphasis on the importance of the introduction to management experience. Thus, as Dobson (2007) argues, the formal educational system is suited to promote sustainability because it may influence students' worldviews and attitudes towards sustainability and contribute to a more profound social change.

However, unsustainability is built into the foundations of modern civilization (Kopnina, 2016). An ideal starting place for reorientation is to start with a focus on expanding the ways that students respect, understand and engage with knowledge.

Undergraduates often face challenges when learning management concepts because they have insufficient life and work experiences to apply theory to practice and to move conceptually from practice to theory (Felder and Brent, 2005). University educators must now go beyond the early attempts to promote content on environmental management and sustainability in the business curriculum, which involved considering the way that managers have identified and responded to environmental and social concerns and have begun to integrate these issues in business decision-making. Now it is more relevant to witness the educational development of a new generation of global executive MBAs (EMBA), particularly important given the growing number of managers responsible for operations and sales in many countries around the globe.

Rather than teaching disciplinary knowledge, universities are shifting their focus to the employability of graduates with a focus on graduate attributes or capabilities (Kember et al., 2017). But there exists considerable debate about the capabilities graduates require and how they are to enhance sustainability in their professions (Sandri, 2013). As most sustainability courses do not have a long track record and as only a limited number of management-oriented continuous education studies exist, so far little is known about how managers could be educated most effectively to become change agents for corporate sustainability (Hesselbarth and Schaltegger, 2014).

This paper investigates executives (current managers) and undergraduate business students (future managers) who have been exposed to supply chain sustainability content. To isolate the many potential influencing factors, the two groups were measured in a controlled environment (the same instructor, discussing the same supply chain sustainability examples, during the same term). Current managers are defined as EMBA students. Future managers are defined as undergraduate students, likely to be 10-15 years from influential positions of power in organizations. Global turbulence is referred to as

economic, environmental, social and/or political turbulence. The study explores whether current and future managers believe that the global supply chain has *contributed* to global turbulence, whether current and future managers believe that SSC actions could help to *reduce* global turbulence and how exposure to supply chain sustainability examples increase global *awareness* and sympathy in current and future managers.

Section 2 reviews relevant literature on SIME, threshold concepts and managers as change agents. Section 3 then outlines the primary data collection and analysis method before Section 4 presents the findings. Section 5 provides a discussion followed by a conclusion and implications for future research in Sections 6 and 7.

2. Literature Review

2.1 Sustainability in management education (SIME)

As the United Nations (2007:3) points out,

‘any meaningful and lasting change in the conduct of corporations toward sustainability must involve the institutions that most directly act as drivers of business behaviour, especially academia. Academic institutions help shape the attitudes and behaviour of business leaders through business education, research, management development programs, training, and other pervasive, but less tangible, activities, such as the spread and advocacy of new values and ideas. Through these means, academic institutions have the potential to generate a wave of positive change, thereby helping to ensure a world where both enterprises and societies can flourish’.

As an education supplier, the integration of sustainability and ethics principles in university curricula offers students knowledge and skills about the changes, systems and

requirements of this business paradigm and broadens their ‘moral imagination’ (Fougère et al., 2014). Business schools in particular, are under more pressure to be better guardians of public interest (Bridgman et al., 2016). Universities can promote sustainability through different channels, such as teaching, research and knowledge transfer, and in management education, universities have an important role in developing a new generation of leaders that are aware of the complex challenges faced by business and society (Hesselbarth and Schaltegger, 2014). In recent years, much discussion has taken place regarding the social role of firms and their responsibilities to society (Setó-Pamies and Papaoikonomou, 2016). In this context, the role of universities is crucial, as it may shape management students’ attitudes and provide them with the necessary knowledge, skills and critical analysis to make decisions as consumers and future professionals. Stubbs and Cocklin (2008) presented a sustainability framework designed to shift students’ thinking by engaging with sustainability from different perspectives, rather than presenting one version of sustainability to them. They also support embedded sustainability learning rather than as a stand-alone topic.

Sustainability learning processes are grounded in awareness, knowledge, attitude, ability and participation (UNESCO, 2014), whereby students need a higher degree of autonomy to progress through and a lower degree of anomie. Universities are multilevel learning environments whereby there is a need to look beyond formal curricular content and pay more attention to implicit dimensions of the learning process in order to create significant learning (Setó-Pamies and Papaoikonomou, 2016).

Examples of how universities have experienced increased recognition and institutional support for their crucial role in addressing key issues of sustainability in the last two decades come firstly from the United Nations declaring the period from 2004 to 2015 as the Decade of Education for Sustainable Development - their objective was to promote

education as the basis for sustainable development, and established the United Nations Principles for Responsible Management Education (PRME). Other examples include the Higher Education Sustainability Act (HESA) in the US, which offers grant programs to educational institutions to help develop and implement academic sustainability curricula and programs, and the University Leaders for a Sustainable Future, an international initiative, that brings together universities with a focus on sustainability and environmental literacy in teaching and practice.

Setó-Pamies and Papaoikonomou (2016) summarise how universities may be considered important pillars that contribute to a more sustainable development through firstly, research and knowledge generation that leads to public policy and stakeholders engagement; secondly, their everyday operations by reducing their environmental impact and increasing their positive social impact; and thirdly, with the knowledge and skills they offer to their graduates who will later put these practices to use as professionals and consumers. This goes beyond operational skills and interpersonal competencies, but explores ‘core values, ethical considerations and issues of wider environmental and geopolitical concern [to] place a strong emphasis on critical analysis of the changing environment’ (Hailey, 1998:40).

Business schools are often scrutinised for how students are currently educated and how the curricula could encourage responsible management principles (Gosling and Mintzberg, 2004; Bennis and O’Toole, 2005; Alcaraz and Thiruvattal, 2010; Kelley and Nahser, 2014). There is a growing number of both academics and business leaders urging for a change in education to better prepare future managers and leaders, by supporting responsible management in business education (Amman et al., 2012). The study by Nonet et al. (2016) looks into how business school students perceive and define responsible management as business schools have been criticised for failing to encourage managers

(such as in MBA programs) to behave responsibly (Osiemo, 2012; Hibbert and Cunliffe, 2015). Furthermore, at undergraduate level, there is a still somewhat untapped opportunity in business schools to exploit millennials' view that businesses have a role beyond profit making (Deloitte, 2016) and research is lacking in what this might mean in practice or what responsible management means to them (Fougère et al., 2014). The importance of soft skills, the development of formal knowledge and critical thinking, and a broad, holistic triple bottom line (TBL) understanding of management with the development of a shared vision for all stakeholders comprise responsible management, according to Nonet et al. (2016).

Teaching guidance for the management of turbulent times is even more rare, with the exception of Antonacopoulou and Sheaffer (2013), as an example. Long standing models on external uncertainties are commonly taught in business schools, but the kind of turbulence now seen is at a more extreme level. In a world where 65% of children entering primary school today will work in a job that does not exist yet (World Economic Forum, 2016), turbulence of the business environment cannot be refuted. It stands that normally HE institutions can build upon the training that students received in previous phases of education. That is why institutions of HE can focus on education in highly specific and specialized knowledge and skills. Education for sustainability, however, cannot follow this 'normal' pathway because much of what students learned in their previous education does not fit into the paradigm of sustainability (Juárez-Nájera et al., 2006). This raises questions for the syllabus and inspires us to investigate what knowledge the two groups (undergraduates and EMBA's) are coming in with (Sigurjonsson et al., 2014). All graduates require skills in ethical competence and sustainability, and education is a crucial component in developing students' critical capabilities to participate in sustainable development (Barth et al., 2007). Sidiropoulos (2014) suggests that each person or group

interprets sustainability through their own value lens, so messages promoting sustainability need to be positioned according to the receptivity (value driver) of the audience. The study by Sidiropoulos (2014) found that these interventions do impact on student views, attitudes and behavior towards sustainability. The key findings are threefold: first, escalating the level of integration into courses increases student engagement and results in stronger impacts on students' sustainability views, attitudes and to a lesser extent their behavior; second, the impact on students varies by age, gender and culture; and third, increasing student knowledge and attitudes towards sustainability, while necessary, is not sufficient to stimulate more sustainable behaviors. Unfortunately, the survey results by Sidiropoulos (2014) are mixed and at best, only indicative.

Hesselbarth and Schaltegger (2014) suggest that the competencies needed for SIME include skills, motivations, and affective dispositions to solve real word sustainability problems and identify and realize opportunities. This paper concurs with that notion but questions whether the two groups (undergraduates and EMBA's) start at the same point. The suggestion that sustainability is a learning journey and each educational intervention contributes towards building greater understanding and orientation towards sustainability (Sidiropoulos, 2014) is an important basis for this paper as the current and future managers are likely to have different starting points as a result of their age, generational upbringing and work experience (Sigurjonsson et al., 2014). While there have been studies on transformative learning for responsible management (Hibbert and Cunliffe, 2015) showing disconnects between knowledge and learning in threshold concepts - this poses the question on the types of students being educated in business schools and how their threshold concepts may differ - not just for implications in teaching preparation and design but also in terms of their impact when they get to the workplace (now or later).

2.2 Threshold Concepts

The term ‘threshold concept’ emerged in the UK from exploration into issues of quality learning in HE (Barradell, 2013). In transformative sustainability learning, threshold concepts identify particularly troublesome, transformative, irreversible and integrative ideas central to a discipline or field of study which engages the human as an active communicating agent rather than simple object to be studied (Barrett et al., 2017). Meyer and Land (2006:i) propose that certain disciplines contain threshold concepts that once understood, often have ‘a transformative effect on internal views of subject matter, subject landscape, or even world view’.

Threshold concepts change the lens with which students view a concept, resulting in transformational leaps in understanding. Since new connections of underlying forces are created in students, crossing the threshold is generally irreversible as students simply think differently about a concept from that point forward. A more advanced conceptualization may result in crossing yet another threshold in the future, however the student will usually never regress back to the pre-threshold understanding (Meyer and Land, 2003, 2005, 2006). Threshold concepts reconfigure understanding and effects how the student thinks and acts following that crossing (Mezirow, 2000; Meyer et al., 2008). To date, management education’s development of threshold concepts is lagging in the general education literature (Hawkins and Edwards 2013; Hibbert and Cunliffe, 2013; Wright and Hibbert, 2015).

Once learners have understood and appreciated a threshold concept, these crucial interpretative insights may result in a transformed internal view of subject matter, subject landscape and even worldview. This transformation may be sudden or gradual, known as liminality, which is the period that precedes the actual ‘crossing’ of the threshold often involving confusion. An encounter with threshold concepts encourages critical reflection

and contemplation. Such encounters often take students into a space of liminality and, if successfully grasped, prompt epistemic and ontological change (Quinlan et al., 2013). This is important in the sustainability context. Hibbert and Cunliffe (2013) described personal development benefits of moral reflective practice through threshold concepts. They contend that enabling students to make connections from micro business cases to the macro economic and cultural systems is critical for ongoing learning and personal development. For example, a balanced review and critique of the impacts of large corporations on global supply chains impact on poverty, so that management students do not define such actions as either a moral positive, a neutral, or a negative, but rather as a complex system, is supported by Neal (2017:58), who suggests that although poverty may have been reduced, it has meanwhile destabilized local economic, social, and environmental systems through pollution, inequitable working rights and conditions and is thus a ‘mixed blessing’. This example demonstrates the complexity behind managing turbulence.

A threshold concept is integrative, exposing the previously hidden interrelatedness of something. Threshold concepts are also bounded (it has borders that, when crossed, lead to other conceptual developments) and often described as troublesome knowledge (conceptually difficult or counter-intuitive). Coupled with a different environmental background of upbringing, millennials are savvy, quick and questioning in their approach to learning. This makes the future managers significantly different to current managers who have been introduced to sustainability gradually as it has gained prominence during their lifetime (Sigurjonsson et al., 2014). Thus, the threshold knowledge of the two groups is an important consideration for SIME.

2.3 Change agents

As sustainability is related to change, the change management literature is drawn upon because it is crucial to address the human values that translate to sustainable behaviors rather than just the technical elements often focused on by management teams (Bovey and Hede, 2001). There has been prior investigation into individuals as change agents (e.g. Tichy, 1974; Kanter, 2000; Hesselbarth and Schaltegger, 2014; Lozano et al., 2015). In the specific context of sustainability management, it can be defined as ‘an actor who deliberately tackles social and ecological problems with entrepreneurial means to put sustainability management into organizational practice and to contribute to a sustainable development of the economy and society’ (Hesselbarth and Schaltegger (2014:26). Although Hesselbarth and Schaltegger (2014) investigate the education of change agents for sustainability but focus on MBA level only, they do appreciate that “Change agents for sustainability are not necessarily senior managers but can be individuals on all levels internal or external of an organization”. The definition of a change agent for sustainability thus also includes those who successfully initiate and promote change toward sustainable development on a lower hierarchy level and without a specific mandate. Lozano et al. (2015) declare that it is vital that students become future organization change agents. It is the sustainability managers that could end up leading the Fourth Industrial Revolution as they have the ability to turn challenges into opportunities for society and companies alike, according to Radeke (2017). Moreover, Bovey and Hede (2001) find that an individual’s personal growth and development is likely to affect their perceptions and thus response to change.

To develop globally responsible leaders, institutions need to develop ‘the potential of a person to act consistently on behalf of society, including the ability to embrace complex trans-disciplinary issues and hands on collaboration with other members of the larger

community' (Muff, 2013:489). When learning is issue centric, not content centric, students address complex problems with a systems perspective, valuable for tackling the paradoxical challenges of our society. University education sharpens students' minds so they are able to make balanced appraisals of issues, and the norms and values to use in this appraisal (Mulder, 2010). Similarly, Barth et al. (2007) stress the importance of instilling ownership of learning so that students can not only generate and acquire new knowledge, but also reflect on their own behavior and values. These pedagogies should be designed to make students feel hopeful, empowered and liberated (Hicks, 2002). Such empowerment can have a spill-over effect (Thøgersen and Ölander, 2003) and contribute to a more profound change towards the vast array of pro-sustainability behaviors (Kagawa, 2007). However, Hoover and Harder (2015) suggest that the process of transformation is particularly complex as those who have researched or engaged in sustainability initiatives or change processes often characterize these as long, progressive, challenging, multiple and characterized by resistance, barriers and contestation (Lozano, 2006). Thus, a significant competency for students is dealing with complexity and uncertainty (Tomkinson, 2009; Sandri, 2013).

The literature has shown that there is a need for including sustainability in professional learning and that universities have a duty to educate responsible leaders for the transition to sustainable societies (Garcia et al., 2006; Hesselbarth and Schaltegger, 2014). Yet, with the exception of Setó-Pamies and Papaoikonomou (2016), who develop a more holistic and integrative model to guide the incorporation of ethics, corporate social responsibility and SIME in order to contribute to a more profound and lasting change in the students'

attitudes, knowledge and behaviour; the growing body of theoretical literature on SIME mainly discusses the integration of sustainability into mainstream management curricula.

Additionally, the literature has shown that as a main education supplier, universities integrating sustainability and ethics principles in their curricula could offer students' knowledge and skills about the changes, systems and requirements of this important business paradigm and as previously mentioned, broaden their 'moral imagination' (Fougère et al., 2014). However, there is a gap in curricular in the lack of capacity for changing old views of sustainability that accommodate a future vision (Viegas et al., 2016). Threshold concepts are important here as a result of reflexive learning. Against the background of globalization and increasing complexity, SIME aims at enabling people to not only acquire and generate knowledge, but also to reflect on further effects and the complexity of behavior and decisions in a future oriented and global perspective of responsibility (Barth et al., 2007). Thus, the starting point for SIME is recognized - for example, Hesselbarth and Schaltegger (2014) argue for what should be learnt, not what should be taught (the output of educational processes).

Nonet et al. (2016) have suggested that business school students should have an understanding of responsible management and that students' own identity may influence their definition, but research is needed on the difference in awareness for current and future managers. If students need to be re-educated with regard to existing knowledge (Juárez-Nájera et al., 2006), first the discovery of what knowledge they already have and how this differs between undergraduate students and MBAs should be investigated.

There are currently no studies on the difference between current and future managers' starting point for sustainability learning (awareness), there is a lack of investigation into what students think they should be taught, and there is a lack of research into uncertainty and turbulence as a topic.

Thus, the research questions ask:

1. Do current and future managers believe that the global supply chain has *contributed* to global turbulence?
2. Do current and future managers believe that SSC actions could help to *reduce* global turbulence?
3. Does exposure to supply chain sustainability examples increase global *awareness* and sympathy in current and future managers?
4. Do current and future managers believe that SIME is key for business programs and are their macro SIME importance views consistent with their micro specific example sustainability views?

3. Research Methodology

This study investigates executives (current managers) and undergraduate business students (future managers) who have been exposed to supply chain sustainability content at a major Canadian business school. To isolate the many potential influencing factors, the two groups were measured in a controlled environment (the same instructor, discussing the same supply chain sustainability examples, during the same term). Measuring the extent that these two groups believed in a possible connection between the turbulence and global supply chain activities required the instructor to not provide any direct evidence of such a connection. Both courses were introductory to operations and SCM and were required classes for their programs. At the end of the term, both groups were then surveyed using the exact same survey instrument and process. Contextually,

the business school is located in a major Canadian city that has traditionally elected conservative ‘right-wing’ political leaders and its economy is heavily based on oil and gas resource extraction.

3.1 Class Content Design

Measuring the extent that these two groups believed in a possible connection between the turbulence and global supply chain activities required the instructor not to provide any evidence supporting or refuting such a connection at any point during the term. The instructor exclusively provided micro supply chain sustainability examples of organizations and the concept of global turbulence was only introduced by the instructor in the minutes before the end of term survey was conducted. This was intentionally executed so that any potential macro connections to global turbulence would have to be reflectively extrapolated by the students themselves while completing the survey. For example, if students connected global turbulence’s increased anti-trade sentiment and or increased income inequality with the global supply chain’s outsourcing of middle class jobs from developed to developing nations, or increased global supply chain shipments contributing to climate change, the student would have had to have made a reflective connection of the global supply chain *contributing* to turbulence independently. Similarly, if students reflectively connected SSCs improved wages and working conditions reducing income inequality or immigration levels, or their lessened environmental impacts reducing global climate change, the students would have had to have made a reflective connection of SSCs *mitigating* the turbulence independently. This design follows Neal’s (2017) call that global supply chain actions should not be presented as a moral positive, neutral, or negative to business students while also incorporating Hibbert and Cunliffe’s (2013) threshold concept contention that enabling student

connection between micro business cases and macro economic and cultural systems is critical for ongoing learning and personal development. During the term, both groups had sustainability and TBL content embedded throughout their various course topics (e.g. strategy, project management, quality, product design, capacity, etc.), however it was primarily focused in the SCM component of the courses. Common supply chain sustainability topics between the courses included conflict minerals, transportation carbon footprint, foreign factory working conditions, re-shoring manufacturing, humanitarian supply chains, refugee logistics, and reverse supply chains. Examples included the Bangladesh Rana Plaza textile factory collapse, BP Horizon oil spill, Tentree, TOMS shoes, Patagonia, Tesla, IKEA and Ford.

3.2 Survey Design and Process

The survey instrument (Figure 3 in Appendix) was comprised of ten questions that challenged students to reflect and generalize the implications from the various supply chain sustainability examples discussed in their class for society and for them personally. Demographic information pertaining to gender and age group was also included to enable more detailed analysis of the survey results. Nine of the questions were measured on a seven-point Likert scale from -3 (strongly disagree) to +3 (strongly agree) with 0 representing neutral. A tenth question was open-ended to capture student comments about the sustainability class content they experienced. Table 1 provides an overview of the survey constructs and associated questions.

Table 1 Survey Instrument Design

Question(s)	Construct
Q1 & Q8	Change in global awareness and sympathy
Q2 & Q3	Importance of Sustainability In Management Education (SIME)
Q4 & Q9	Global supply chains contribution to and mitigation of global turbulence

Q6 & Q7	Global supply chains as drivers of positive change (social and environmental)
Q5	Consistency of micro incident beliefs with macro SIME beliefs

The survey was anonymous, optional, and conducted on paper during the last class of the term for both groups. Just before distributing the survey, students were shown a slide (see Figure 4 in Appendix) to aid in their common understanding of the macro economic, environmental, social, and political turbulence being experienced globally. To increase the number of EMBA respondents, students taught by the same instructor the previous year (Winter of 2016) were also surveyed during their final class of their Winter 2017 term. Class sustainability content between Winter 2016 and Winter 2017 for these two groups was compared and found to have no significant differences.

3.3 Respondent Details

The instructor taught three separate consecutive sections of the undergraduate course, each with 60 students officially enrolled. Ethnicity of the students is not tracked by the university, however 14% of undergraduate students are identified as international students (primary residence outside of Canada). After eliminating incomplete survey submissions, valid surveys were provided by 47, 38, and 42 students for response rates of 78.3%, 63.3%, and 70.0% respectively. Prior to grouping the three sections of undergraduate data, a Kruskal Wallis test was conducted to see if there were significant differences (Table 2). No significant differences were found for any of the questions at the $p < .01$, $p < .05$, or $p < .10$ levels enabling the sections to be grouped together for further statistical analysis. Valid undergraduate surveys totalled $n=126$. Demographically, 67

students were female, 57 were male, and 2 were other, with 124 (98.5%) of the students being 25 and under.

For the EMBA students, the Winter 2017 students (“EMBA1”) provided 39 valid surveys from 50 registered students (78.0% response rate) while the Winter 2016 cohort (“EMBA2”) provided 38 valid surveys from 59 registered students (64.4% response rate). The combined cohorts had an average of 14 years of progressive work experience. The top three industry sectors represented were energy (48.1%), health care (6.5%), and education (6.5%) and all EMBA students resided locally. Prior to grouping the two sections of EMBA data, a Kruskal-Wallis test was conducted to see if there were significant differences (Table 3). No significant differences at the $p < .01$, $p < .05$, or $p < .10$ levels were found for eight of the nine questions. Only question five revealed a significant difference between the sections ($p = 0.003$). Investigation revealed that EMBA2 group discussed the Rana Plaza incident more briefly in class compared to EMBA1. Combined, valid EMBA surveys totalled $n = 77$. Demographically, 23 students were female, 54 were male, and 0 were other. Age groupings ranged from 26-30 up to 51-55. In all, undergraduate (future managers) and EMBA (current managers) combined to provide a total of 203 valid surveys.

3.4 Statistical Analysis

Likert scale question data was initially tabulated with mean, 95% confidence intervals, and percentage negative/neutral/positive calculated for each of the nine questions. In addition, Kruskal-Wallis statistical significance testing was conducted to compare current and future managers’ responses as well as differences by gender. Kruskal-Wallis is a non-parametric test equivalent to one-way ANOVA used to compare multiple independent

samples. It hypothesises that the different samples being compared were drawn from the same distribution or from distributions with the same median.

4. Findings

Survey data was primarily analysed by comparing current managers (EMBA) versus future managers' (undergraduate) views of supply chain sustainability, however results by gender also provide insights. The statistical tables (2-12) are provided in the Appendix. Table 4 provides a summary of the undergraduate responses while Table 5 provides the undergraduate mean ratings by gender. Table 6 provides a summary of the EMBA responses, Table 7 provides the EMBA mean ratings by gender, and Table 8 provides the EMBA mean ratings by age group. Figures 1 and 2 below provide mean-rating scores for undergraduate versus EMBA and undergraduate versus EMBA by gender respectively. In addition, Kruskal-Wallis statistical significance tests were conducted for both primary and secondary analyses enabling deeper insights into these differences.

TAKE IN FIGURE 1

TAKE IN FIGURE 2

4.1 Global awareness and sympathy

The results indicate that educating current and future managers on supply chain sustainability strongly increases both groups' global awareness and sympathy. Surprisingly, supply chain sustainability content increased global awareness equally among both current and future managers with a mean rating of +1.68. The data appears to indicate that undergraduate students and EMBAAs might actually have a similar global awareness starting point, despite what could be perceived as inherent life and work experience differences. Humanitarian supply chain and refugee logistics content also positively influenced both undergraduates (+1.57) and EMBAAs (+1.32) to be more sympathetic to those affected by natural disasters and conflict. By increasing future and current managers' global awareness and sympathy, SSC content creates more responsible citizens and business leaders which should over time mitigate some of the factors contributing to global turbulence.

Analysis by gender revealed statistically significant differences for question eight. The increase in sympathy generated from learning about humanitarian supply chains and refugee logistics was significantly higher for both undergraduate females (Table 10, $p=0.006$) and EMBA females (Table 11, $p=0.012$) versus their male colleagues. Combined by gender (Table 12), the differences were extremely significantly ($p=0.00007$). Clearly, such supply chain sustainability content impacts females more effectively, changing their personal views going forward. These results are similar to Vidal et al. (2015) who found that a significantly higher proportion of female and senior students grasped the threshold concept better in a business and society class focused on sustainability. Also, where awareness and sympathy developed through international student experiences has been found to promote the development of globally responsible leaders (Pless et al., 2011; Sroufe et al., 2015). It appears that supply chain sustainability

classroom education could create a similar positive impact on students for a fraction of the delivery cost.

4.2 Importance of sustainability in management education (SIME)

Questions two and three measured how strongly respondents believed that sustainability was here to stay and their perceived level of its importance for future management education. Both current and future managers very strongly supported the inclusion of sustainability as a key component of business programs with both groups having mean scores of +1.96 for question three. For undergraduates, over 96% positively supported such content (Table 4) while EMBA support was very nearly 91% (Table 6). Responses for question two reveal that while both EMBA and undergraduates strongly believe that the TBL evaluation method for organizations is not a passing fad and is here to stay, the EMBA (-1.68) held this belief slightly more strongly compared to the undergraduates (-1.37). In fact, this difference was found to be statistically significant at the $p < .10$ level. This difference could be attributed to EMBA actually seeing sustainability influencing their business decision-making through work experience, as opposed to undergraduates who may be more speculative of sustainability's real-world impact. For both questions, the strong support remained, regardless of how the data was analysed, with no statistically significant differences being found by program, by gender, or by age group. Some EMBA student responses included *"Business has more capacity to affect change than all the NGOs put together"* and *"Sustainability should be required for all business students"*. Reasons included *"This is a critical component of business today"*; *"This is where the corporate world has to go. Learning more will be beneficial"* and *"I think it's interesting and very applicable to any business now and even more in the future"*. Undergraduate students explained, *"This was great exposure to the ideology that business can help*

change the world” and “I think it is important and made me realize it is not just about profit”. This data provides clear evidence for business school program designers that sustainability needs to be a key component in business education for both current and future manager students. Considering the contextual environment of this study was a business school located in a politically unliberal minded city with a diverse economy, but a politically conservative minded city whose economy is primarily oil and gas extraction based, these results further behoves program designers to incorporate sustainability into their programs.

4.3 Global supply chain's contribution to and mitigation of turbulence

Responses to question four indicate that both current and future managers strongly believe that the globalization of supply chains over the past 20 years has contributed to the turbulence firms are currently experiencing, with the EMBA's and undergraduates having mean scores of +1.94 and +1.48 respectively. Over 92% of the EMBA's and over 78% of the undergraduates believed to some degree that turbulence has increased due to global supply chains. With neutral ratings incorporated, only 1.3% of EMBA's and only 3.97% of undergraduates believed that global supply chains conversely had not contributed to turbulence. Considering the research design in which the instructor refrained from providing any evidence of the macro impact of the micro class examples, it was found that the strength of these connections is much higher than expected. These results also provide evidence that students can experience a threshold concept through only their own personal reflection, and that direct instructor facilitation of that threshold concept may not always be required. While both groups strongly believed in a connection between global supply chain practices over the past 20 years and turbulence, a statistically significant difference was found between the groups (Table 9). Current managers

believed significantly stronger in the connection ($p=.007$) versus the future managers. The data suggests that work and life experience significantly increases a threshold connection between global supply chain activities and some of the negative consequences fuelling global turbulence. These results further support Land et al.'s (2005) contention that prior experience can cause variation in how students understand threshold concepts. In contrast to question four where significant differences were found between current and future managers' inference of the global supply chain's contribution to turbulence, question nine shows a consistent inference of this threshold concept. Perhaps reflective questions where respondents look to the past (such as question four) are more likely to be influenced by experience than questions where respondents look to the future (such as question nine). This may be yet another variation of threshold concept understanding for management students. From a business program design standpoint, this significant difference may be interpreted as providing guidance that sustainability content could be tailored differently for undergraduates versus executives. While both groups indicated that forward looking sustainability content is needed (question three), the extent to which the past global supply chain actions are incorporated into class content could vary. For example, to enable these future managers to "catch up" to the current managers' more experienced views on this connection, undergraduates could be provided with more content relating to past global supply chain actions. Conversely, due to their students' previously accumulated life and work experience, executive programs could have less content on past global supply chain actions.

Results for question nine reveal that both current and future managers also strongly believe that sustainable business practices could reduce the turbulence. EMBA's and undergraduate mean ratings were +1.83 and +1.88 respectively. Over 91% of undergraduates (Table 4) and over 87% of EMBA's (Table 6) see sustainability as having,

to some degree, the ability to reduce the turbulence. This strong support remained however the data was analysed, with no significant differences being found by program, by gender, or by age group. While management education has become more recently focused on preparing managers for navigating through these external turbulent times (there was a Journal of Management Education ‘turbulent times’ special issue in 2018 edited by Anderson et al.), our study results suggest that managers, when provided with SSC content, actually view turbulence not as something that is exclusively external requiring navigation, but something semi-internal that sustainable business actions can reduce. It appears that the benefits of SIME (particularly related to supply chains) could go beyond aiding organizations’ TBL performance. Such content would also aid society in general if current and future managers view their global supply chain actions as either contributing to or as mitigating global turbulence.

4.4 Global supply chains as positive environmental and social change drivers

Questions six and seven were designed to see if respondents believed that sustainable business practices could reduce the turbulence, and more specifically, was it social or environmental positive change that could result from global supply chain sustainability. Both undergraduates (+1.90) and EMBA (+1.77) firmly believe that the global supply chain can be an agent of positive environmental change while they believe even stronger in its potential for positive social change (+1.99 and +2.08 respectively). Comments received included *“This is an important topic to explore to ensure we are growing into responsible business professionals not only focusing on profit but seeing the interconnectedness of all other aspects”* and *“The triple bottom line and ethics should be a main focus in introductory courses. By setting this standard, business leaders will have these ideas flowing through their mind with every decision. We have to make this idea a*

standard in business that the world will eventually follow". We find the result that both groups believe that global supply chains can have a slightly higher potential positive influence on its social change rating, compared to its potential positive environmental change, somewhat surprising. On the surface, it would appear that positively impacting the environment would be easier to accomplish for global supply chains by making direct changes to product design, packaging, production, and transportation for example. Clearly, both current and future managers believe in the indirect power of global supply chains to have an even greater impact socially in the communities in which they operate.

4.5 Consistency of micro incident beliefs with macro SIME beliefs

Question five was designed to test if respondents' micro beliefs for a specific supply chain incident were consistent with their macro beliefs in the importance of sustainability being a key component of business programs (question three). The specific incident in question 5 was Bangladesh's Rana Plaza textile factory collapse in 2013 that killed over 1000 textile workers. Both student groups were asked to what extent they agreed or disagreed that western clothing companies that were having their products made at Rana Plaza had 'blood on their hands'.

As previously discussed, question three revealed consistent and strong support from both current and future managers (Figure 1), with both groups having mean scores of +1.96. Interestingly, the same cannot be said for question five's results. While future managers' mean score decreased slightly to +1.49, current managers' mean score plummeted to only +0.96, by far their lowest mean score. This difference was found to be statistically significant (Table 9, $p=0.015$) indicating that current managers do not believe in western companies culpability in the Rana Plaza incident as strongly as future managers do. These contrasting results appear to show that unlike future managers,

current managers might have opinions on specific incidents that do not align with their opinions in general about the importance of supply chain sustainability. It is possible that undergraduates more firmly hold to their ideals in both macro and micro scenarios while EMBAAs, through life and work experience, become more apt to allow specific incidents to be exceptions to their ideals. While these results appeared to have exposed a generational gap between current and future managers, a more detailed analysis revealed that the underlying significant difference was actually gender based.

As Figure 2 shows, undergraduate and EMBA males and females showed very strong support for the macro importance of TBL content in business programs (question three), with mean scores for these four subset groups ranging from +1.90 to +2.04. This was further confirmed when question three responses were combined by gender and analysed for statistical differences (Table 12) resulting in a p-value of 0.884.

In contrast, analysis by gender for the micro example (Rana Plaza) revealed an interesting phenomenon. While there was not a significant difference between male and female undergraduates (Table 10), there was a significant difference between the EMBA males and females. Female EMBAAs had a mean rating of +1.78, while their male counterparts had a surprising mean rating of only +0.61. These differences were found to be very statistically significant ($p=0.0016$). Of the four subset groups, only the male EMBAAs were found to have inconsistent sustainability macro and micro views based on the Rana Plaza example. These results reveal that it might be wise for organizations to ensure sufficient gender diversity among their SCM executives to reduce potential sustainability risk. Furthermore, gender differences on question five became extremely statistically significant ($p=0.0005$) (Table 12) when responses ignored undergraduate versus EMBA classifications. This appears to indicate that the macro / micro supply chain sustainability disconnect gap observed above may initially be only slightly present, but

potentially grows significantly over time in males. These results indicate that from a pedagogical standpoint, management programs might want to consider ways of tailoring sustainability education by gender. For example, sustainability related courses could explicitly require a mix of genders in group composition for activities and assignments.

5. Discussion

The study found that both current and future managers made strong connections between how the global supply chain has contributed to turbulence, and how sustainable actions could reduce the turbulence. This occurred with the instructor only providing specific micro sustainability examples. With much business emphasis placed on the UN 2030 Agenda for Sustainable Development, the expectation is that SIME will continue to prosper. By exposing students to the sustainable development goals (SDGs), future business leaders increase their knowledge on inequalities, decent work and economic growth, industry, innovation and infrastructure, responsible consumption and business and non-business partnerships for achieving the goals (5,8,9,10,12,17). With better understanding of the SDGs, individuals are well placed to be positive change agents for sustainability (Hesselbarth and Schaltegger, 2014), as the literature suggests that University education better equips future leaders (Mulder, 2010; Radeke, 2017). Moreover, students are being given opportunity to reflect on their own behaviours through SIME, having a positive impact (Hicks, 2002; Barth et al., 2007; Fougère et al., 2014). SIME program design could include more reflection on the macro impacts of past management actions to reduce the potential for alienation from the communities in which they impact.

The findings show that both current and future managers (92.2% and 78.6% respectively) overwhelmingly believe that the globalization of supply chains over the past 20 years has contributed to the turbulence. Furthermore, current and future managers (87.0% and 91.3% respectively) believe even stronger, that turbulence could be reduced through increased sustainability. While studies such as Vidal et al. (2015) have found that undergraduate business students believe corporations have equal responsibility to economy, society, and environment, ours is the first study, to our knowledge, that reveals strong connections of global supply chain decisions contributing to and mitigating economic, environmental, social and political turbulence. Furthermore, both current and future managers inferred this connection, a threshold concept type of learning (Mezirow, 2000; Meyer et al., 2008) on their own, as the instructor did not provide content supporting or disputing a possible connection. The results show that turbulence should not be viewed as external factors which managers need to *navigate through*, but rather should be viewed as semi-internal factors that managers can *contribute to or mitigate* by their global supply chain sustainability decisions. Expanding global supply chain sustainability program design to include more historical reflection on its impacts could further strengthen the connections found in the study by making some of the connections to turbulence more explicit. Such an approach may increase the strength and speed at which current and future managers experience this threshold concept.

The study also showed that including humanitarian supply chain and refugee logistic content significantly increases both current and future managers' sympathy for those impacted by disaster and conflict. Such an increase in personal empathy could be viewed as helping to reduce some of the social and political turbulence. Results also revealed a potential disconnect for current male managers between their macro support for sustainability as compared to their beliefs in a specific circumstance (Rana Plaza). This

exposes a potential global supply chain risk for organizations that can be mitigated by ensuring gender diversity when making global supply chain sustainability decisions.

By avoiding the teaching of a certain viewpoint, but instead to help students understand and articulate all the sides of the sustainability debate is supported by Stubbs and Cocklin (2008). This reinforces a fluid framework and perspectives can be drawn from a continuum of positions. Investigating SIME using threshold concepts - gateways to previously unknown ways of thinking (Meyer and Land, 2003, 2005), the students had a new understanding which may be at the level of the way of thinking about or generating knowledge in a discipline (epistemological) and/or with respect to one's own being and identity (ontological). Additionally, the individual's personal growth and development is still likely to affect their perceptions and thus response to change (Bovey and Hede, 2001).

In summary, the findings proposit that SIME should be a key component for the development of current and future managers as the importance of SIME is recognised by both groups of students. Both current and future managers believe that the global supply chain has contributed to global turbulence and that that SSC actions could help to reduce that turbulence. SIME has an important role to play - despite different upbringing and work experience, current and future managers have a similar starting point of sustainability understanding (an aspect Sigurjonsson et al. (2014) called for to be investigated). Additionally, exposure to supply chain sustainability examples increase global awareness and sympathy in current and future managers. Sustainability content needs to be carefully considered showing historical examples and to incite more empathy, humanitarian supply chain and refugee logistics should feature over natural disasters and conflict generally. Also, female team members should be involved in sustainability management decisions i.e. as males and females were found to have different levels of

sympathy, having a gender balance on the team is crucial for parity in decision making. Finally, the study contributes to threshold theory by showing that threshold learning can occur without direct facilitation from the instructor, and through confirming the influence of experience in threshold learning.

6. Conclusion

This paper has considered the education of future business leaders in sustainability, looking at the importance of SIME and the differences of teaching this important topic to undergraduates (young adults) up to the EMBA (established career individuals). MBAs are often in positions now or very soon in the future to be able to make a change in their organizations. There is a mood shift so that the turbulence can be mitigated rather than just managed. The global supply chain has contributed to current turbulent times (such as outsourcing local jobs to foreign countries, high immigration, etc.) and SSC approaches can help to mitigate those concerns while creating globally aware managers that act as agents of positive social change.

SIME was investigated as a way to mute some of the turbulence students will face in their working lives. Despite different types of experience, undergraduates and MBAs had a similar threshold knowledge of sustainability. Content must be effectively designed to have the sought after impact of empathy, which translates into operative management of the turbulence. The importance of gender diversity is recognized in decision making groups relating to sustainability. Rather than view SIME as learning for a problem that needs to be solved, SIME should be promoted as an opportunity to advance and implement alternate approaches to managing turbulence. This study is the first to compare current and future managers in the learning and management of global supply chain

turbulence and by considering the needs of both groups in education, a wider net has been cast over the impact that both groups will have in the workplace.

7. Limitations and future research directions

The limitations of the research and opportunities for further studies arising from the findings provide a future research agenda that may be fruitful in terms of investigative merit. Firstly, many studies refer to gender as a sustainability issue – the SDGs have gender as one of the 17 goals - but evidence as a determinant of different managerial sustainability decision making is less researched (Galbreath, 2011). For example, the composition of decision making teams specifically related to sustainability endeavours, which are arguably different to other commercial decisions as they may promote sympathy, is a gender dynamic which needs further investigation. Secondly, more applied research into the navigation of turbulence is needed to develop the findings. For example, if managers believe they have a role to play in navigating the turbulence, it begs the question what more do they need to know or skills do they need to hone to be able to successfully achieve this, despite research into change agents and curriculum design being quite established.

Appendices

TAKE IN FIGURE 3

TAKE IN FIGURE 4

Table 2 Undergraduate lectures significance comparison

Lecture	N	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
3	46	60.41	68.23	62.22	66.53	70.85	67.88	67.34	67.00	66.95
4	38	62.64	65.29	62.72	67.66	62.91	57.78	61.53	69.42	59.59
5	42	67.65	56.70	65.61	56.42	55.99	63.88	61.08	54.31	63.26
Chi-Square		1.040	2.459	0.244	2.591	3.906	1.787	0.928	4.425	0.936
df		2	2	2	2	2	2	2	2	2
Asymp. Sig.		0.594	0.292	0.885	0.274	0.142	0.409	0.629	0.109	0.626

* p < .10, ** p < .05, *** p < .01

Table 3 EMBA lectures significance comparison

Lecture	N	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
1	39	40.26	39.31	41.51	39.60	46.21	38.23	40.99	39.10	40.55
2	38	37.71	38.68	36.42	38.38	31.61	39.79	36.96	38.89	37.41
Chi-Square		0.270	0.016	1.150	0.063	8.548	0.106	0.695	0.002	0.421
df		1	1	1	1	1	1	1	1	1
Asymp. Sig.		0.604	0.900	0.284	0.801	0.003***	0.744	0.405	0.967	0.516

* p < .10, ** p < .05, *** p < .01

Table 4 Undergraduate response summary

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
-3	0	31	1	0	1	0	0	2	0
-2	1	37	0	3	3	0	0	2	1
-1	2	23	1	2	1	2	5	4	1
0	7	24	3	22	20	6	3	14	9
1	38	6	27	31	33	28	27	27	28
2	56	3	58	41	39	45	56	46	49
3	22	2	36	27	29	45	35	31	38
mean	1.603	-1.365	1.960	1.587	1.492	2.016	1.905	1.540	1.849
95% CI	0.162	0.246	0.162	0.206	0.214	0.166	0.168	0.224	0.173
-ve	2.38%	72.22%	1.59%	3.97%	3.97%	1.59%	3.97%	6.35%	1.59%
0	5.56%	19.05%	2.38%	17.46%	15.87%	4.76%	2.38%	11.11%	7.14%
+ve	92.06%	8.73%	96.03%	78.57%	80.16%	93.65%	93.65%	82.54%	91.27%

Table 5 Undergraduate means by gender

	Count	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Female	67	1.60	-1.16	1.90	1.63	1.61	1.94	1.93	1.88	1.93
Male	57	1.81	-1.54	2.02	1.35	1.35	2.04	1.89	1.25	1.88
Other	2	1.00	-3.00	2.50	0.00	1.50	2.50	1.00	0.50	0.50

Table 6 EMBA response summary

	Q1 <i>Made More Globally Aware</i>	Q2 <i>3BL is a Passing Fad</i>	Q3 <i>3BL Key in Business Programs</i>	Q4 <i>GSCM Contributed to Turbulence</i>	Q5 <i>Rana Plaza Blood on Hands</i>	Q6 <i>GSCM agent of + 've Social Change</i>	Q7 <i>GSCM agent of + 've env. Change</i>	Q8 <i>Humanitaria n SCM made more Sympathetic</i>	Q9 <i>Sustainabi lity Help Reduce Turbulenc e</i>
-3	1	27	0	0	2	0	1	1	0
-2	0	22	0	0	3	0	1	0	1
-1	1	15	0	1	8	0	4	3	1
0	9	5	7	5	14	3	3	19	8
1	19	5	12	13	19	14	12	15	14
2	27	3	35	37	18	34	35	24	29
3	20	0	23	21	13	26	21	15	24
mean	1.675	-1.675	1.961	1.935	0.961	2.078	1.766	1.325	1.831
95% CI	0.256	0.308	0.202	0.202	0.337	0.183	0.276	0.282	0.245
- 've	2.60%	83.12%	0.00%	1.30%	16.88%	0.00%	7.79%	5.19%	2.60%
0	11.69%	6.49%	9.09%	6.49%	18.18%	3.90%	3.90%	24.68%	10.39%
+ 've	85.71%	10.39%	90.91%	92.21%	64.94%	96.10%	88.31%	70.13%	87.01%

Table 7 EMBA means by gender

	Count	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Female	23	1.91	-1.87	2.04	1.91	1.78	2.13	1.83	1.87	1.91
Male	54	1.57	-1.59	1.93	1.94	0.61	2.06	1.74	1.09	1.80

Table 8 EMBA means by age group

Age Group	Count	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
26-30	3	2.67	-2.67	3.00	2.33	1.67	1.67	2.33	1.00	2.33
31-35	20	2.05	-1.75	1.65	1.75	1.25	2.20	1.90	1.80	2.00
36-40	21	1.38	-1.67	2.10	2.19	0.71	2.14	2.05	1.24	1.62
41-45	18	1.61	-1.33	1.94	1.83	0.89	2.17	1.89	1.33	2.00
46-50	13	1.31	-1.69	1.85	1.85	0.77	1.69	0.92	0.69	1.54
51-55	2	2.50	-2.50	3.00	2.00	1.50	2.50	1.00	2.00	2.00

Table 9 Undergraduate versus EMBA significance comparison

	N	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Undergrad	126	101.11	107.38	101.88	93.65	109.65	100.79	102.63	106.99	102.30
Grad	77	103.46	93.19	102.19	115.67	89.49	103.97	100.96	93.83	101.51
Chi-Square		0.085	2.962	0.001	7.320	5.941	0.158	0.044	2.568	0.009
df		1	1	1	1	1	1	1	1	1
Asymp. Sig.		0.770	0.085*	0.970	0.007***	0.015**	0.691	0.834	0.109	0.923

* p < .10, ** p < .05, *** p < .01

Table 10 Undergraduate by gender

Gender	N	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Female	69	60.81	67.66	60.83	66.22	67.37	63.25	63.40	71.26	62.78
Male	57	66.75	58.46	66.74	60.20	58.82	63.80	63.62	54.11	64.38
Chi-Square		0.940	2.090	0.941	0.908	1.829	0.008	0.001	7.446	0.067
Df		1	1	1	1	1	1	1	1	1
Asymp. Sig.		0.332	0.148	0.332	0.341	0.176	0.930	0.971	0.006***	0.796

* p < .10, ** p < .05, *** p < .01

Table 11 EMBA by gender

Gender	N	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Female	23	43.70	34.76	42.85	39.39	51.11	40.39	39.91	48.50	40.46
Male	54	37.00	40.81	37.36	38.83	33.84	38.41	38.61	34.95	38.38

Chi-Square		1.566	1.272	1.109	0.012	10.004	0.146	0.062	6.291	0.153
Df		1	1	1	1	1	1	1	1	1
Asymp. Sig.		0.211	0.259	0.292	0.914	0.002***	0.703	0.803	0.012**	0.696

* p < .10, ** p < .05, *** p < .01

Table 12 Undergraduate and EMBA combined by gender

Gender	N	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Female	92	101.92	106.02	101.38	102.47	117.34	102.22	102.73	119.34	102.11
Male	111	102.07	98.67	102.51	101.61	89.28	101.82	101.39	87.63	101.91
Chi-Square		0.000	0.837	0.021	0.012	12.113	0.003	0.030	15.687	0.001
df		1	1	1	1	1	1	1	1	1
Asymp. Sig.		0.985	0.360	0.884	0.914	0.00050***	0.959	0.863	0.00007***	0.979

* p < .10, ** p < .05, *** p < .01

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