

9 Summary and Conclusions

§ 9.1 Introduction

This doctoral dissertation presented the creation of a holistic framework that would aid students in reviewing sustainability tools, assessments and marketing. The previous chapters present the methodological, peer-reviewed approach towards this research that consisted of qualitative and quantitative methods which combined relevant literature and stakeholder needs.

In Chapter 2, a survey was conducted to identify features, trends, and needs in relation to sustainability in higher education. It indicated that there was a stakeholder need for a universal sustainability assessment system in higher education while also identifying a gap in current assessment systems; namely not including the economic well-being of graduates.

In Chapter 3, a qualitative review was conducted to develop a theoretical framework for comparing sustainability assessments. It was empirically tested and resulted in a methodological framework for comparing assessment systems.

In Chapter 4, the framework was utilized for a gap analysis on the prominent STARS assessment systems. During the research, the framework itself was identified as having a gap because it did not address the economic metrics that were needed by stakeholders.

In Chapter 5, a qualitative review was conducted to determine the best economic metrics to be applied in sustainability assessments. The economic return of a degree is a very well-studied topic but it is novel, and controversial, to include post-graduate economic metrics in sustainability assessments. Three metrics were proposed to be used in sustainability assessments: under-employment, starting salaries and over-education.

In Chapter 6, a quantitative study was conducted to determine the best economic metrics to be applied in sustainability assessments. Stakeholders identified employment being their most important driver, but unsustainable perceptions were also identified in terms of the cost of education and the repayment of educational debt.

Utilizing the research, a website was created to test both the framework and economic metrics to validate their usefulness and relevancy to stakeholders.

In Chapter 7, the relevance of the economic calculator was validated. Stakeholders strongly agreed that the metrics should be included in sustainability assessments. Furthermore, the data collected validated that a majority of stakeholders would accumulate an unsustainable amount of debt.

In Chapter 8, the validation of the framework led to inconclusive results. The low amount of data collected led to some anecdotal evidence that there may be no need for a universal assessment system for sustainability.

The present chapter summarizes the main additions to science presented in this dissertation while also answering the research questions posed in the introduction. It also presents a discussion to the greater meaning of this dissertation and provides recommendations for future research.

This chapter will consecutively discuss the following:

- Additions to science
- Answering the research questions
- Discussions on key results, limitations, scope and the controversy of this topic
- Recommendations
- Outlook

§ 9.2 Additions to Science

Practical and theoretical additions to science have been made by this dissertation. The practical additions have been made surrounding the need for economic metrics to be included in sustainability assessment in higher education. The theoretical additions have been made surrounding the need for a universally acceptable sustainability assessment in higher education.

§ 9.2.1 Practical additions to Science

There is a definitive need for the inclusion of economic metrics in sustainability assessments. Chapter 1, Chapter 5 and Chapter 6 all provided roughly a 90% agreement from stakeholders that economic metrics should be included in sustainability assessments. Beyond just the stakeholder needs, there is also the quantifiable evidence that education is economically unsustainable.

The fact that there is a growing international student debt crisis is not new. However, in terms of sustainable debt, this research has identified gaps in student's economic perceptions versus realities. In Chapter 5 students perceive that they can assume a higher level of debt repayment than is sustainable. While this perception is in and of itself flawed, it is further challenged when the realities of the economic data collected in Chapter 6 showed that even at the unsustainable level of debt identified in Chapter 5, graduates would still be in debt for much longer that they expect. Even if graduates were to maintain a sustainable debt repayment of 8% they would still carry the economic burden from higher education for decades to come.

Sustainability assessment in higher education needs to include economic metrics rather than just focusing on the ecological and societal aspects of sustainability. If sustainability assessments do not implement economic metrics their effectiveness and relevancy to engender sustainability will be undermined by the economic realities of graduates. Chapter 7 highlights this preference; while there was a robust participation the economic calculator there was significantly less interest in the sustainability framework.

§ 9.2.2 Theoretical additions to Science

The theoretical additions have been made surrounding the need for a universally acceptable sustainability assessment in higher education. Overwhelmingly, experts globally oppose a universal method of measuring sustainability in higher education. However, Chapter 1 identified that stakeholder want a universal system. This aligns with the literature that students are increasingly driven by a university's level of sustainability while also highlighting the vulnerabilities stakeholders have to "greenwashed" sustainability marketing.

This research created a theoretical model for a universal framework for comparing sustainability assessment. Chapter 2 lead to the creation of a framework using peer-reviewed literature while also conducting an initial test to determine viability. Chapter 3 further applied the framework and found that it had gaps due to the lack of economic metrics identified as a stakeholder need in Chapter 1. After identifying economic metrics in Chapter 4 and 5, the final framework was created and tested to see stakeholder acceptance.

Unfortunately, the test of the tool did not result in quantitative data to either dispel or validate the tool. Stakeholders, when presented with the option of the economic calculator or sustainability assessment, optioned overwhelmingly to spend their time on the economic calculator rather than on sustainability assessments. Without data to back up the framework, it is still a novel theoretical idea added to the science regarding sustainability assessments.

§ 9.2.3 Summary on Additions to Science

Summarizing, this research has provided a practical and theoretical addition to science. Chapter 1, 4, 5, 6 and 7 have provided evidence that economic metrics should be included in sustainability assessments in higher education. Stakeholders demand it, economic perception versus realities are creating unsustainable economic burden on graduates and the current assessment systems do not include economic metrics, leaving them incomplete and potentially irrelevant considering that economic concerns drive stakeholders.

It has also provided a novel theoretical framework for comparing assessment systems that includes economic metrics. Chapter 1, 2, 3, 4 and 5 have provided the metrics needed based on qualitative and quantitative data. While this tool has a sound theoretical base, it still remains untested as Chapter 7 failed to provide the necessary data to prove the relevance of the framework.

§ 9.3 Answering the Research Questions

This section gives detailed answers to the research question and the sub-research question posed in the introduction. The overview of the research methodology is also presented summarizing each chapter's research objectives, results and how it influenced this dissertation.

§ 9.3.1 Primary Research question:

Can a holistic framework be created that will aid stakeholders in reviewing a universities level of sustainability?

The answer to the question was a partial yes, as described below.

Yes, a holistic framework can be created. Stakeholder's needs were identified in Chapter 1, and the theoretical framework was created using peer-reviewed literature in Chapter 2. Chapter 3 highlighted the lapses in the framework between the literature and stakeholder's needs which lead to Chapter 4 interdisciplinary review of economic metrics that were tested in Chapter 5 and ultimately included in the framework.

Yes, it would theoretically aid stakeholders in reviewing a universities level of sustainability. Other assessments/frameworks to date lack the economic parameters that have been repeatedly demanded by stakeholders. This framework has included the economic metrics and, in theory, would now holistically address stakeholder needs in reviewing a universities level of sustainability.

The data collected was inconclusive in validating if the framework aided stakeholders in reviewing a universities level of sustainability... The test that was created to see if the framework met stakeholders need failed to receive the feedback that was expected and did not produce conclusive results. The lack of responses led to three possible interpretations of the outcomes that, while meaningful, did not address the primary research objective of validating the framework.

- 1 The lack of feedback may indicate that the frameworks approach was too technical (and potentially overwhelming) for respondents.
- 2 The framework addressed comparing assessment systems while stakeholders were looking to for a universal assessment system. The framework created may not have been the solution required by the stakeholders.
- 3 It may also have been “discounted” by respondents who, when faced with the immediate rewards of the economic calculator, optioned to bypass responding to the framework.

...but the economic metrics were shown to aid stakeholder's review of a universities level of sustainability. The economic aspects of the higher education were well received by stakeholders who used the tool and provided 90% support that economic metrics should be included in a universities level of sustainability.

§ 9.3.2 Sub-Research questions:

What are the features, trends, and needs in relation to sustainability in higher education?

Overall, higher education stakeholders seem to have a broad interpretation of the term “sustainability,” with only 3% identifying it as a solely ecological term.

Sustainability seems to be a socially desirable idea, but not the key factor in decision making. 90% of stakeholders responded that a higher education institution’s level of sustainability influenced their decision making, but only 59% said they would not attend an institution if it was unsustainable. The same statistical divergence was noted in employability. 87% of participants stated that sustainability was important in their job satisfaction, however only 35% would consider working somewhere else if their institution was unsustainable.

The key needs identified in relation to sustainability in higher education was the need for a uniform rating system and inclusion of economic parameters in sustainability assessments. 95% of respondents agreed that there was a need for a uniform rating system of sustainability within institutions of higher education while 92% of participants agree that employability after graduation should be included in the measurement of institutions sustainability.

Is there a comprehensive framework to compare assessments? If not, could one be created through existing peer-reviewed literature?

No, there was not one comprehensive framework for comparing assessments. Three pieces of literature were identified that dealt with this specific topic. While each of publications offered useful parameters for comparing assessments, there were unique criteria set forth in each paper. Thus a comprehensive framework could be developed using peer reviewed literature.

Do existing assessments cover the features, trends and needs of stakeholders in relation to sustainability in higher education?

No. The literature available on comparing assessment lacked a key criteria requested by stakeholder: employability.

Should employability be considered a parameter of sustainability assessments within higher education?

Yes, but not utilizing the term “employability.” Employability is a vague term that primarily has three components: starting salary, under-employment and over-education. In order to address stakeholder’s needs for employability, these three criteria should be considered a parameter of sustainability assessments rather than just “employability”.

What is the importance of starting salary, under employment and over-education to higher education stakeholders?

Full-time employment was the most important aspect to stakeholders. Starting salaries and over-education are met with mixed opinion with stakeholders not showing an unequivocal preference. This relative uncertainty, especially on starting salaries, seems to contradict strong stakeholder’s expectations that education should cost less than 15% of their future wages while also being debt for less than 10 years after graduation.

Can a test be conducted to validate why a student’s post-graduation economic performance should be part of a higher education institutions metric for sustainability?

Yes, post graduate economic performance should be considered part of a higher education institutions measure for sustainability. A test was conducted that showed that the current economic burden of higher education is not aligned with stakeholder’s expectation in terms of debt repayment. Based on stakeholder expectations, a majority of graduates would either be in debt for decades after completion of their degree or would never be able to repay their debt. Both of these scenarios can be considered socially unsustainable and should be part of a higher education institutions measure of sustainability.

Can a test be conducted to validate that stakeholders want a universal sustainability assessment for higher education institutions?

Inconclusive. A test was conducted but did not generate data that would indicate an appropriate universal sustainability assessment system. During the test, stakeholders actively responded to economic parameters concerning higher education sustainability while shunning a universal approach to reviewing sustainability assessments.

§ 9.3.3 Research Overview

Figure 9.1 outlines the general flow of the research starting from the objective to the testing and validation. The research started from identifying the features, trends and need of stakeholders, gradually evolving into the sub-research questions that drove the scope of each of the peer-reviewed papers.

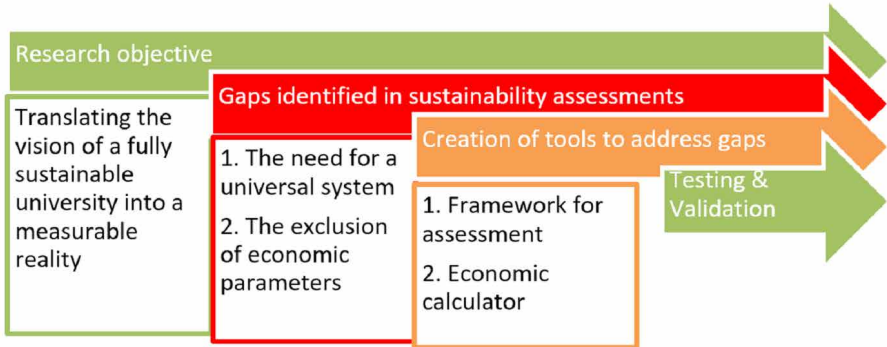


FIGURE 9.1 Research flow

Figure 9.2 breaks down the details of the research questions and the results that guided Chapters 2-7 and ultimately led to the conclusions summarized previously.

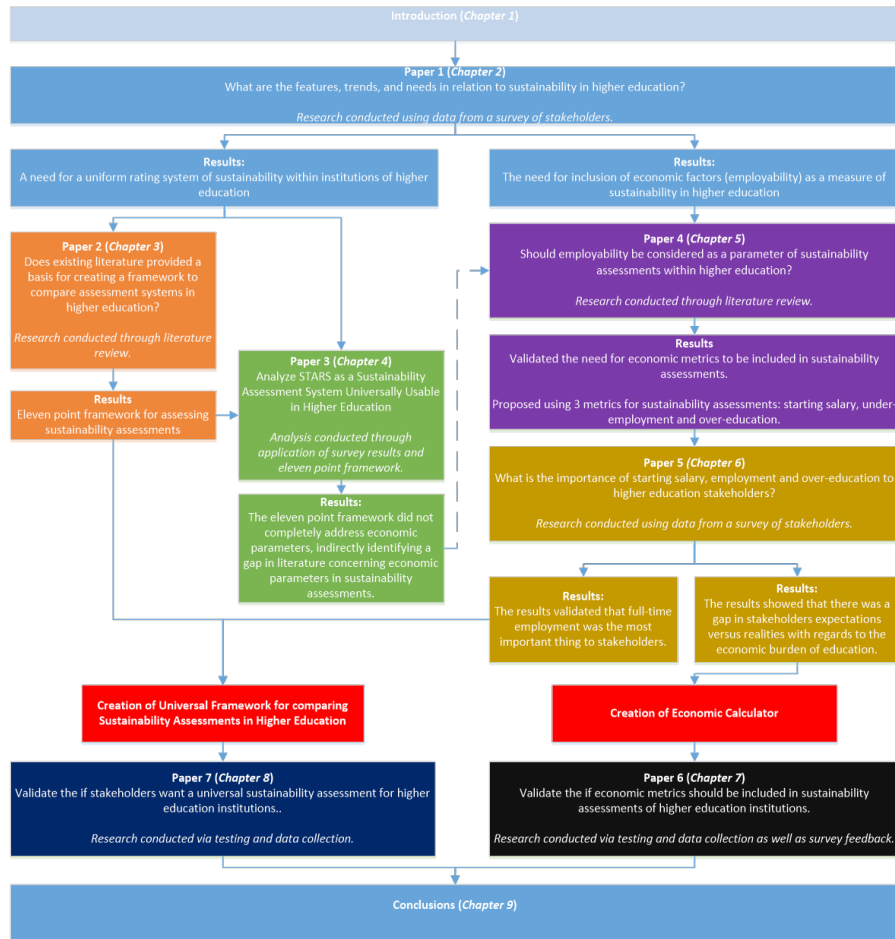


FIGURE 9.2 Research Overview

§ 9.4 Discussions on the key results and limitations of this research

This section discusses the relevance, and controversy, surrounding the key results from this dissertation. It also looks to take a critical look at the data and provide the limitation based on the approach and scope of the studies.

§ 9.4.1 Key Results

There were two primary results from this research:

- Practical data that supports the need for the inclusion of economic metrics in sustainability assessments
- A theoretical universal framework for comparing sustainability assessments.

§ 9.4.1.1 Economic Parameters

Even without this research, there is a known and growing crisis regarding student debt. While the student debt crisis is predominately located in the United States it is also a growing internationally. What this research has accomplished is highlighting the misalignment between stakeholders and institutions with regards to defining sustainability.

Institutions and academics have actively omitted the economic parameter of higher education from sustainability assessments. They have made a calculated effort to emphasize the ecological and social aspects of sustainability while completely disregarding the economic realities of the educational choice of their students.

There have been a range of responses and rationale as to why economics should not be included as a metric of an institutions level of sustainability, such as:

- This will make education a commodity
- Institutions should focus on education, not on the economic well-being of graduates
- The data is too hard to collect
- The assessment should measure the “institutions” level of sustainability in terms of its economic, ecological and societal footprint
- These are decisions that a student should make prior to pursuing higher education and have nothing to do with sustainability

All of these reasons, quite frankly, go in the face of any definition of sustainability used by institutions. A quick review of the declarations, non-profit organizations and experts in the field all support that higher education is the key to making a sustainable society.

Higher education is facing its greatest challenge ever in meeting its responsibility to provide the knowledge and educate citizenry that will lead to a thriving civil society... Higher education plays a unique and critical role, one often overlooked, in making a healthy, just and sustainable society and a stable climate a reality (ACUPCC, 2009).

- **How can an institution be deemed sustainable if it is creating a graduate that will be indebted for decades to come?**
- **How can an institution focus on empowering students on ecological and societal sustainability when upon graduation they will be driven by the economic realities of their debt, which may drive unsustainable behavior?**
- **If an institution is focusing just on its level of sustainability, should it not take into account the impact that its indebted graduates have on the surrounding region/world?**

Sustainability assessments are the most relevant assessments to include economic parameters. The exclusion of the economic wellbeing of a graduate leaves a lopsided, ineffective approach that will undermine the long term benefits of any sustainability initiative. It could be argued that it is misleading for any institution to market itself as “sustainable” if it does to not include the economic well-being of its graduates.

§ 9.4.1.2 Theoretical Framework

The culmination of this dissertation was hypothesized to be the solution to translating the vision of a fully sustainable university into a measureable reality. The empirical research from Chapter 2 supported the hypothesis and showed that stakeholder unequivocally wanted a universal assessment of sustainability in higher education. This need, identified by stakeholders, guided this dissertation to create a theoretical framework that, conceptually, worked. It was based on peer-reviewed literature from the experts and augmented to include what stakeholders wanted.

When the conceptual framework was presented to stakeholders there was, surprisingly, limited data collected. The low response rate, especially when compared to the sizeable response rate to the economic calculator, may infer several results:

- **There is no need for a universal comparison of assessment system.** Rather, like Selby et al. (2009) pointed out that rigorous institutional engagement with marketing of sustainability credentials will provide a beneficial feedback loop that deepens and embeds the commitment and adherence by administrators, academics and students. In this case, the theoretical framework in and of itself is a success as it has added to the discussion and feedback to continue to commitment of the institutions.
- **Sustainability is a socially desirable idea in higher education.** The same stakeholders that wanted a universal assessment within higher education in Chapter 2 also provided data that indicated sustainability was not their main driver in decision making. When presented with the opportunity to engage with sustainability assessments, users instead opted for the economic calculator, a significant driver in their decision making. This kind of preference could also be explained by behavior discounting, where immediate rewards are valued more than long-term rewards (Frederick et al., 2002). The more immediate needs, such as the economic calculator, are weighted more heavily than future wants, such as the sustainability framework. This interpretation also indirectly validates the usefulness of the assessment framework since it has included the economic aspects which drive higher-education stakeholders.
- **The concepts and parameters surrounding sustainability are complex.** The general topic of sustainability assessment has been exhaustively studied, perhaps better studied than sustainability itself (Kates et al., 2001). While stakeholder claims to spend time assessing institutions on their own, the fact is that each sustainability assessment has a depth of knowledge and justification behind it that is probably not full assessed by the stakeholder. Each assessment system has a group of knowledgeable professionals that create, support and justify their methodology. A user may be overwhelmed with not only having to digest each assessments methodology, but also bring it to relative terms and compare it based on criteria that is subject to interpretation. Furthermore, the depth of these assessment systems may not be targeting what stakeholders consider to be variables of “importance” or interest. This supports Selby et al. (2009) claim that the end user is a point of feedback rather than the creator of sustainability assessments.
- **The tool was not what stakeholders were looking for. Ultimately the stakeholders were looking for a universal assessment system.** This tool helps but the concepts and framework regarding each assessment system, but is not prescriptive in being an actual assessment system. The low response rate may suggest that the tool itself was not useful for the end user.

§ 9.4.2 Limitation of research

As an overarching statement, this research is empirical in form. This research of this dissertation has dealt with new concepts that do not have directly available data sets. The surveys, literature and the data collected were broad in scope, cross-disciplinary and relatively small. The results should be interpreted as a starting-point for further definitive studies to arrive to a final conclusion.

Throughout this research, technology has been advancing exponentially and there is a limitation to the technology used at each stage of the research. Initially the surveys were collected utilizing Google surveys, which was a relatively new service that had limitation in collecting data but offered the best services for the limited budget available. The first Google survey was unsecured and was exposed to potential double submission from respondents, although they were reviewed to eliminate any apparent double submissions (example: two sequential submissions with the exact same data). Had there been more money available during this first survey an alternative survey collection would have been selected that would have eliminated such potential bias.

The economic calculator was subject to multiple entries from a single user. The calculator was created with the intention of providing live feedback for the users while collecting data. Data was collected through a "silent" feature, meaning each time the user clicked the "Calculate" button and refreshed the results the corresponding data was collected. Due to the coding of the widget, the IP addresses were not collected. Reviewing the data, there were no apparent double entries of data (the exact same data sequentially) and there also does not seem to be multiple entries from a single user. While multiple entries from a single user would skew the sample size, the multiple iterations also offer a perspective on how various methods a user would consider funding their studies.

The website was created utilizing Wordpress on a limited, self-funded budget. This means that the website was not created by a professional website developer and was antiquated when compared to more expensive apps and widgets. This may have limited shareability amongst respondents and also skewed the data collection for the assessment framework by not making it as "user friendly" on mobile phones as some of the newer applications.

There was also a time limitation set for data collection. Data collection timelines were limited to correspond with availability of the researcher considering a busy work/professional life. The data collected for Chapter 6 corresponded with a relative spring downtime professionally, while Chapter 7 & 8 data was during the winter holiday period of December/January. While this was an optimal time to collect and assesses data from a professional and personal workload, it also may have limited the data set

considering that there may have been more optimal times during the year. Under other conditions a more appropriate time for data collection, such as before the start of a semester, multiple data sets (Fall and Spring) or a longer submission period may have provided a more robust data set.

Specific to time limitations, the validation test found in Chapter 7 and 8 may have limited the data collected for the framework. While the data, or lack of data, also provided valuable insight it may not have given the framework the comprehensive testing required to achieve a more concrete result. Pressing factors to students, such as debt, are more salient due to the direct personal impact, therefore the sustainability framework was discounted in the presences of the economic calculator.

Like with all scientific work, there is a certain bias of the researchers. Since the data in this research was based on empirical data and theoretical concepts, the results were susceptible to the perspectives of the authors. This research branched out into sciences that were not originally expected. The research had initial expected to deal with aspects of the built environment within a higher education institution and ventured heavily into economics, psychology and broad-spanning metrics. The dissertation dealt with bias proactively by including outside authors from cross-disciplinary fields, especially on the theoretical studies.

§ 9.5 Recommendations

The conclusion that economic metrics should be included in sustainability assessments in higher education institutions has an empirical support from within this research and is supported with large data sets from other fields. In three different instances approximately 90% of stakeholders agreed that economic metrics should be included in sustainability assessments, a surprisingly consistent response rate considering the empirical nature of the data. The data collected on stakeholder preferences on payback periods indicated that the economic burden of higher education may led to an unsustainable economic debt load. Internationally there is a student debt crisis.

While the data collected did not validate the framework, it is still a useable concept that provides a starting point for further definitive research on translating the vision of a sustainable institution of higher education into a measurable reality. Specific research should be conducted on:

- What are the acceptable debt loads for students and are they sustainable?
- What are the key indicators that higher education institution should track regarding economic metrics?
- How to effectively communicate economic metrics to stakeholders in a way that is holistic with regards to sustainability?
- Utilize the framework for a comprehensive review of all sustainability assessments currently available (not just STARS and CSAF) to identify strengths and weaknesses

§ 9.6 Outlook

Over the last five years of research I have witnessed the continual evolution within sustainability assessments in higher education. The progress is exciting and there will continue to be advances over the next decade.

Overall, this dissertation found that sustainability assessments seem to be getting it (mostly) right. While the metrics and methodology vary, there is no question that these assessments are adding value to a universities sustainability efforts. The assessments seemed to be advanced in the social and environmental aspects of pedagogy, both theoretical and practical, while also holding the institution accountable for the actual management of the facilities by promoting transparency and rewarding operational efficiency.

The next step for sustainability efforts in higher education institutions will be to focus on a student’s lifecycle: what happens during and after the student’s tenure. The ability of a university to produce a sustainable minded student has, to some degree, already been achieved. More and more schools have initiatives, clubs, and social events that expose students to sustainability. The next major milestone is to make sure that these lessons and experienced are carried beyond the university setting and into the graduate’s everyday life.

This is not a quantum leap for universities, but it is a significant change to the discussion surrounding sustainability in the university setting.

Universities are already tracking what graduates are doing after completion of their degree. And if the universities themselves are not tracking, there are plenty of for/ nonprofit organization dealing with this matter.

Specific to this dissertation, the economics surrounding education have been, and will continue to be, well studied so the application of economic metrics into sustainability assessments would be relatively simple. This, by all accounts found within this dissertation and the general global growth of student debt, is needed.

The real change will need to come from university leadership. These leaders will have to support and promote that a graduate's actions in the world is also a metric of the institutions sustainability. This is the feedback loop that will help improve institutions of higher education and their sustainability initiatives and continue to foster the improvement that is needed to empower the next generation of leaders.

