A Study of Crowdsourcing in Undergraduate Entrepreneurship Education

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Crowdsourcing is an approach to harness knowledge and support from crowds using online platforms. Its use occurs within businesses and academia. Small businesses especially derive value from crowdsourcing because entrepreneurs have startup costs as well as time challenges to bring services/products to market. Entrepreneurs may also seek innovation and authenticity to differentiate from competitors. Since crowdsourcing offers these benefits, the researchers queried faculty from public and private universities who taught undergraduate classes in entrepreneurship to explore teaching methods utilized as well as specific aspects of crowdsourcing that were included. Researchers analyzed the resulting crowdsourcing gaps as well as crowdsourcing teaching challenges. Based upon their findings, new crowdsourcing learning activities and strategies were developed such that undergraduate entrepreneurship students may further benefit from crowdsourcing.

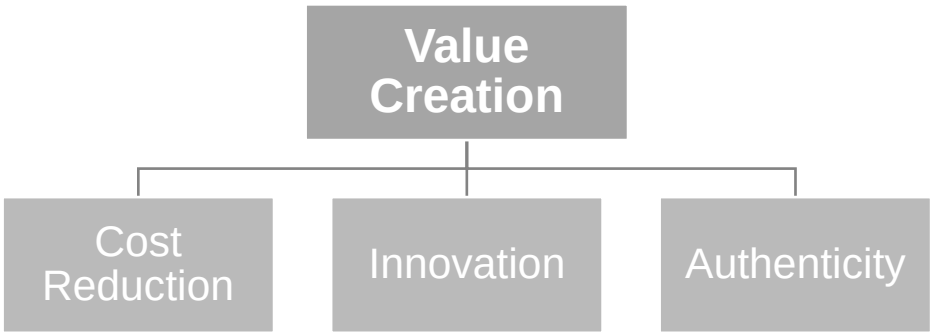
Keywords: entrepreneurship education, crowdsourcing, crowdfunding, crowd creation, crowd wisdom, crowd voting, co-creation, small businesses, entrepreneurship, marketing, undergraduate education

INTRODUCTION

Through technology, crowdsourcing uses resources and crowds' knowledge to support organizations' needs through an open call (Tremblay & Yagoubi, 2017). Crowdsourcing is also regarded as a means to access expertise as applied to problem solving as well as the outsourcing of tasks to a large group of people – often unidentified. Several key concepts comprise crowdsourcing. First, crowdsourcing involves the concept of externalization because part of its work is completed by others outside of the organization. Next is the concept of relationships which can be examined by the intensity, anonymity, and duration shared by the organizations and others who complete their task(s). The last is a connected crowd that used a social platform to share their expertise (Lebraty & Lobre-Lebraty, 2019).

The motivating factor of crowdsourcing is to provide the originating organization with some type of value creation, which is illustrated by Lebraty and Lobre-Lebraty (2019, p. 53) as follows:

FIGURE 1
METHODS OF VALUE CREATION



Cost reduction occurs in different ways, like internal process changes or external crowdsourcing to another firm. Furthermore, internal resources are saved which also equate to a cost reduction. For example, labor costs are reduced because an organization does not have to pay salaries or benefits and does not have professional development costs. Instead, an organization pays the crowd for a specific task completed. Additionally, an organization gains opportunity costs because in-house employees can work on the organization's mission critical tasks (Chrum, 2013).

Crowdsourcing innovation can be used to create or enhance services and products or to solve complex problems. A crowd is utilized to create ideas/solutions that are "novel, implementable, and useful" (Majchrzak & Malhotra, 2020, p. 4). The result is often a fresh perspective that can result in competitive advantage and other organizational benefits. For example, the organization receives many diverse and unexpected ideas in a very quick timeframe, Also, the organization can easily add to the innovative ideas received through crowd voting activities to gain assistance with deciding the best ideas to implement (Braineet, 2021).

Authenticity is the foundation for strategic intent as leaders express organizational aspirations (Liedtks, 2008). Mintzberg and Waters (1985) highlight the authentic aspirations as part of the strategic planning process in which organizational leaders manage the process but do not control the emerging strategic ideas. Leaders often favor the use of crowdsourcing for authentic strategic planning because they may receive the pairing of novel, diverse perspectives because crowdsourcing is able "to liberate the potential which exists in large pools of people. It will shift the way work gets done" (Howe, 2008, p. 8).

With the benefits of cost savings, innovation, and authenticity, the use of crowdsourcing can be quite beneficial to entrepreneurs starting and running their businesses. Additionally, undergraduate entrepreneurship education has been identified as a significant avenue to produce successful entrepreneurs (Li et al., 2016; Man & Lau, 2008). Hence, the importance of crowdsourcing for entrepreneur's small businesses warrants an exploration of the current incorporation of crowdsourcing within undergraduate entrepreneurship courses, as well as the creation of additional crowdsourcing educational opportunities.

CONCEPTUAL BACKGROUND

To introduce crowdsourcing, five practices will be discussed as posited by Howe (2008). Since this paper queried the teaching of crowdsourcing within undergraduate entrepreneurship classes, the aspects of academia and small businesses encourage a review of crowdsourcing within small businesses and academia. Last, since some of the participants' results focus upon the topics of marketing and crowdsourcing, the conceptual background also incorporates a review of crowdsourcing as part of the marketing planning process as well as the academic instruction of crowdsourcing in marketing courses.

Five Types of Crowdsourcing

Crowdsourcing occurs in five practices: co-creation, crowd creation, crowd voting, crowd wisdom, and crowdfunding (Howe, 2008). Co-creation engages consumers in the design and development of new products for the company. Consumers share opinions and needs as well as creativity and problem-solving skills (Füller, 2010). As an example, a customized eye glass store, Alain Afflelou, invites customers to submit ideas for lenses and frames (Innovators, n.d.).

Crowd wisdom utilizes the crowd's expertise to share its knowledge offering diversity and independence while it offers to others a collection of opinions (Zhitomirsky-Geffet & Maman, 2014). The wisdom from many individuals rather than a single individual is deemed to be more valuable (Kopeć & Szopa, 2015; Surowiecki, 2004). Because the tendency exists for individuals within crowds to adopt similar ideas of others, much like group think in teams, diversity within crowds to provide crowd wisdom is recommended (Ivanov, 2017).

Crowdfunding utilizes the crowd to obtain financial resources for existing or new initiatives by seeking donations, offering rewards, requesting loans, or providing equity (Johnson, 2021). The crowdfunding process occurs on a platform, like Kickstarter, GoFundMe, Indiegogo, or Kiva, that receives a percentage of the generated funds. For example, Kickstarter charges a 5% flat fee and an additional 3%-5% fee of total fund generated for any successfully funded project. If no funds are generated, Kickstarter does not impose a fee (Kickstarter, 2021). The likelihood of individuals supporting a crowdfunded initiative can be linked to anticipated ROI; proximity to the project's physical location and/or proximity to the project's idea; and the convenience the project offers to its funders such as understandable information (Zhitomirsky-Geffet & Maman, 2014).

In crowd creation, users generate content, such as Wikipedia. In crowd voting, organizations issue an open call to a crowd to vote on an issue, then aggregate collected responses to use in their decision-making process.

Crowdsourcing in Small Businesses

Crowdsourcing is especially beneficial to small businesses who need assistance with time and money challenges. For example, crowdsourcing permits small businesses to have reduced time to market. Small businesses can become very involved with their customers or other members of the crowd to solicit feedback on the initial product and recommended product enhancements (Smith et al., 2013). In this approach, the crowd is regarded as the subject matter experts who speed up the product-to-market phase (Smith et al., 2013). As an example, some musicians have sought ideas from the crowd as they encourage fans to submit names of album titles (Titlow, 2018).

The crowdfunding element of crowdsourcing may also appeal to small businesses. Unlike traditional funding that may focus on loans from one or a few individuals off-line, crowdfunding solicits funds from a much larger audience online. In return, the funder may receive stock, rewards, or a loan and may also just decide to donate capital without expectation of payment or rewards (Kurani, 2020). For example, Beaubax Lifestyle, LLC (2021) is a small business specializing in different types of travel apparel such as travel shoes, jackets, pants, and shirts. Its use of crowdfunding on the Indiegogo and Kick Starter platforms generated over $100,000. Seeing even greater success, the start-up Pebble Time Smart Watch generated over $20,000,000, surpassing its own company goal of $500,000 while soliciting funds on the Kickstarter platform (Gage, 2018).

Crowdsourcing in Academia

In addition to crowdfunding benefiting businesses, crowdfunding benefits academia. Llorente and Morant (2015) contend that crowd learning (a version of crowdsourcing) can enhance lectures by involving students to teach each other under the mentoring of the instructor. Additionally, crowdsourcing can strengthen the quality and quantity of material instructors share with students such as pooling resources for student learning activities as well as syllabi. An example within the area of entrepreneurship, the US Association for Small Businesses and Entrepreneurs (USASBE), offers an area on their site for members to share curriculum, syllabi, videos, and learning activities (2015). Additional, Merlot (2021), an

International online platform, offers free academic resources such as e-portfolios (prerequisite courses, learning outcomes, assessments, and course resources) as well as course material (book information as well as instructor and student resources) that can be adopted by instructors (Openstax, 2021).

Additionally, Llorente and Morant (2015) assert that crowdsourcing can be adopted to tie together alumni financial contributions to student tuition, materials, and study abroad fees. Numerous websites easily assist students with crowdfunding such initiatives. For example, to solicit funding from alumni, Llorente and Morant (2015) recommend the use of AlumniFunder or Unisprout. A popular platform that addresses a variety of academic areas for funding is GoFundMe. ZeroBound assists with garnering funding for existing college debt. Last, for student loans, the CommonBond and Sofi platforms can be used (CrowdCrux, 2021).

In academia, numerous institutions have creatively implemented crowdsourcing initiatives. NC University used co-creation for a textbook written by students. St. Johns' university co-created a textbook contributed by 90 countries. CA State University Fullerton used crowd wisdom and crowd voting for strategic initiatives. Indiana University used crowd wisdom when users answered each other's technical questions instead of relying on help desk personnel (Skarzauskaite, 2012). Last, crowdfunding (Kickstarter) was recommended in entrepreneurship students' business plans (Voelker & McGlashan, 2013).

In this next section, we relay the previously discussed concepts that introduce the topic of crowdsourcing from two perspectives: 1. Its use in marketing planning functions in business environments and 2. Instruction about crowdsourcing in marketing-related classes. Much of the literature regarding business applications includes information about where, when, and why crowdsourcing is effective and how to implement successful crowdsourcing initiatives. Much is published regarding co-creation of value, which sets the foundation for successfully implementing all five types of crowdsourcing. Literature regarding the instruction of crowdsourcing in business and specifically marketing classes is more limited, but related studies suggest that including instruction about crowdsourcing in marketing-related courses offers value.

Crowdsourcing as Part of the Marketing Planning Process

The positive implications for companies that successfully implement crowdsourcing initiatives as part of the marketing planning process are four-fold, including an improved infrastructure, engaged customers, a stronger utilitarian and hedonic value proposition, and improved financial viability from both operational cost and revenue perspectives (Dejassi & Decoopment, 2013). Other benefits to companies include avoiding wasteful use of resources on low-value new products or promotional campaigns (Chang & Taylor, 2016). Goodman and Paolacci assert that crowdsourcing for the purpose of data collection provides "unprecedented efficiencies, providing researchers with participants who can be accessed at any point in time, are more demographically diverse, and are less expensive to reach than traditional research participants" (2017, p. 196). Chang and Taylor affirm that involving consumers in the idea stage of new product development saves time and money, getting the product to market earlier, but that involving consumers in the later stage of design and engineering may add to the timeline and thus reduce a company's financial potential (2016). Additionally, Parvanta et al. contend that crowdsourcing results in "well-researched and creative" content for engaging social media posts at lower investments of time and money than traditional research and content creation (2013). Blue Fountain Media (n.d.), a digital agency headquartered in New York City, indicates that an engaging social media campaign can result in 10 different business benefits, including but not limited to increases in brand awareness, brand loyalty, brand authority, improved cost-effectiveness, and better market insights.

Crowdsourcing carries some risk, including the possibility that participants may feel "cheated" and exploited (Dejassi & Decoopment, 2013). One example of this is described by Alexis Ohanian, co-founder and CEO of the Internet site Reddit. In a Ted talk, Ohanian references a Greenpeace "name the whale" contest designed to create a groundswell of support to change legislation to protect the whales off the coast of Japan. When the crowd voted for "Mr. Splashy Pants," Greenpeace was disappointed with the results and extended the deadline for the contest. Reddit and their readers took offense and flooded the contest for votes for Mr. Splashy Pants (Ohanian, 2009).

Other risks include the potential for time-consuming interactions with crowdsourcing participants, the possibility of providing too much transparency into the supply chain, balancing company quality standards and ceding control to participants, and choosing between the heterogeneous demands of varied participants (Prahalad, 2004). Despite the risks, many companies are opening their business models to engage customers via crowdsourcing to co-create customer value.

Several authors discuss the effectiveness of engaging customers to co-create customer value (Chesbrough, 2006; Prahalad et al., 2006; Vargo & Lusch, 2006; & Zwick et al., 2008). Based on this foundation, Dejassi and Decoopment conclude that companies who intend to incorporate crowdsourcing into the marketing planning process should review their business models and refine them as necessary to integrate customer engagement (2013). Bal et al. list effective uses of crowdsourcing as solving problems, new product innovation, and improving consumer experiences, and further defines two sources of crowdsourcing, one that is consumer needs-based (conceptual) and one that provides input into the design or engineering of new products (2017). Other authors suggest that businesses that crowdsource the marketing applications of ideation and new product design and refinement can achieve higher sales performance (Zhu et al., 2017). Still others note a variety of situations in which crowdsourcing is most effective during the innovation process, including small (entrepreneurial) businesses, low-technology companies or "technology-turbulent" new product initiatives, emerging countries, and B2B consumers (Chang & Taylor, 2016). Overall, this literature supports the use of crowdsourcing for specific tasks and in specific situations.

Discussions about how to successfully implement crowdsourcing include some similarities and some differences. In Chapter 2 of his book The Future of Competition: Co-Creating Unique Value with Customers, Prahalad addresses the "building blocks of co-creation" (2004). Since many crowdsourcing efforts are focused on co-creation, Dejassi and Decoopment use these building blocks as the foundation for implementing crowdsourcing (2013). According to Prahalad, the building blocks include dialogue (deeply engaging and mutual beneficial two-way interaction), consumer access to information and resources, and even aspiring lifestyles, risk assessment and management aimed at keeping the risks of harm to consumers minimal, and transparent flow of information between the company and consumers (2013).

Parvanta et al. indicate that a specific audience must be targeted and cites Nielsen's 90/9/1% rule to support the belief (2013). Otherwise known as "inequality participation" (Hill et. al., 1992), the 90/9/1% rule states that 90% of participants in online communities read but do not contribute, 9% contribute occasionally, and only 1% contribute often. Parvanta et al. (2013) suggest that companies first find the "right" community, target the 90% to provide direction, target the 1% for creative input, target the 9% for design input, and then disseminate information to the full 100%. Zhu et. al. echo Parvanta et al. stating that because certain expertise at specific stages is important to realizing better marketing performance, companies may want to incentivize specific crowdsourced expertise during specific phases rather than leaving it to self-selection (2017). Likewise, Parvanta et al. (2013) mention the need to incentivize using the motivational drivers of creative crowdsourcing identified by Roth: The Four Fs, Fun, Fulfillment, Fame, and Fortune.

In his book *Yammer*, Waghmare identifies 10 specific steps to successfully employ "social collaboration," listed below:

1. Identify groups or parties between whom social collaboration will take place.
2. Define the goals you want to achieve.
3. Define the way of collaboration, i.e., the way both parties will discuss, share information, and assist each other to achieve goals.
4. Collaborate face-to-face or through video or audio or text.
5. Keep your collaboration purely social and professional.
6. Respect the interests of each participant.
7. Define a time limit for the collaboration so that the discussion will be fast and energized.
8. Impose no hierarchy during social collaboration. People defined with roles and responsibilities need to act whenever needed.
9. Work as a team since no hierarchy is present.

10. Sustain motivation and energy. (2018)

Academic Instruction of Crowdsourcing in Marketing Courses

Given the value that crowdsourcing brings to the marketing planning process, business students must be prepared to use it (Hall & Griffy-Brown, 2014). However, research regarding teaching crowdsourcing in business curricula is limited. Much has been written recently about using crowdsourcing as a pedagogical tool in research which, of course, could be applied to research in business and marketing curricula. Several studies report that in lieu of traditional—and often competitive and limited—funding, academic researchers are turning to crowdfunding to support their research (Averett, 2013; Palmer & Verhoeven, 2016; Roberts, 2017; Rubin & Callaghan, 2019). Other related discussions include knowledge aggregation via crowdsourcing. Rubin and Callaghan hypothesize that new technologies like crowdsourcing will improve research productivity. This hypothesis was not supported by their quantitative data; however, they did note that qualitative data showed that those surveyed were interested in crowdsourcing information, with a particular interest in crowd-voting. According to qualitative responses, respondents described crowd-voting as a "dependable way of improving efficiency and quality of research outputs" (2019, p. 8). Based on a review of assorted studies regarding crowdsourcing and knowledge aggregation in non-academic environments, Rubin and Callaghan also declare that crowdsourcing, as a "disruptive innovation," may improve both the quality and quantity of academic research (2019).

Despite the growing use of crowdsourcing in academic research, the instruction of crowdsourcing in marketing curricula is difficult to find, and even within the business discipline is sparse. In fact, VitalSource (2021), a provider of e-textbooks from multiple publishers, lists one crowdsourcing book (specific to the tourism industry) in the category of marketing, four such books in the category of entrepreneurship, and one such book in the category of business communications. These are the only books in the over-arching business category at the date of submission of the paper.

On the topic of business management (but not marketing), Hall and Griffy-Brown acknowledge that business programs in education are not keeping up with technology like crowdsourcing and indicate that revamping curricula to embrace a "crowdsourcing paradigm" will help management students "better meet the dynamic challenges of the 21st century workplace" (2014, p. 95). It is on this premise and the growing use of crowdsourcing in the marketing planning process that this paper is based.

METHODOLOGY / RESEARCH DESIGN

Within extant literature, the use of crowdfunding within entrepreneurship courses has largely been within entrepreneurship Finance courses (Raineri & Sohmen, 2021). Since five types of crowdsourcing types exist, the authors decided to conduct a national survey of undergraduate entrepreneurship instructors to explore the types of crowdsourcing being utilized in their courses. The results could support recommendations for the inclusion of all five types of crowdsourcing within entrepreneurship courses, complementary courses, and student projects as well as propose new avenues for ongoing research in this area.

Sample

To get a wide representation in our sample, recruits were identified from nationally ranked U.S. higher education institutions that offer undergraduate entrepreneurship courses. The details are as follows:

- Subject for this study were identified from business programs that have entrepreneurship majors and entrepreneurship courses as listed from the US News and World Report Best College Rankings Online Bachelor's Degrees and Programs Best Undergraduate Business Programs Rankings, US News and World Report Best College Rankings Online Bachelor's Degrees and Programs (Top 20), The Princeton Review/Entrepreneur Magazine Top 25 Undergraduate Schools for Entrepreneurship, and US News and World Report Best College Rankings Online Bachelor's Degrees and Programs Best Undergraduate Entrepreneurship Programs. To determine the appropriate faculty and chairs from these academic institutions,

the researchers reviewed the institution's information on program-level websites, the entrepreneurship academic course plan, and the institution's course scheduling systems. The researchers also did Internet searches and utilized their own knowledge of institutions to create an email list of subjects.

- The researchers emailed an invitation to participate to chairs and undergraduate entrepreneurship faculty. Upon agreement to participate, a survey was then emailed that contained a link along with an Informed Consent. Appendix A contains the survey introduction letter.

Instrument

The survey took participants approximately fifteen minutes to complete. The initial questions probed the background of subjects, such as their academic affiliation, title, position types, entrepreneurship courses taught, and entrepreneurship topics. Additionally, the survey listed the five practices of crowdsourcing: co-creation, crowd creation, crowd voting, crowd wisdom, and crowdfunding (Howe, 2008) and queried if participants performed research in those areas.

The survey examined if participants incorporated any of the five practice areas of crowdsourcing in courses they taught and asked subjects to discuss the teaching method utilized. Participants were also asked if they noted any improvements recommended by themselves or by students. In addition to participants' own entrepreneurship courses, the survey also probed if crowdsourcing was included in non-entrepreneurship courses and if it was advantageous to include crowdsourcing in other entrepreneurship courses. Last, participants commented on potential reactions and challenges if the topic of crowdsourcing were extended into additional entrepreneurship courses. All questions can be found in the instrument in Appendix A.

RESULTS

Participants from 10 public universities and five private universities participated in this exploratory study. The researchers emailed 209 surveys and received 29 completed surveys, which equates to approximately 11% completion rate. The rank of participants included Professor, Associate Professor, Assistant Professor, Visiting Assistant Professor, Instructor, Lecturer, Adjunct and were tenured, tenure-track, and fixed-term.

Participants taught and engaged in crowdsourcing research. 67.5% of participants have taught one or more undergraduate entrepreneurship courses that included some aspect of crowdsourcing. Additionally, 30% of participants have engaged in crowdsourcing research. The specific courses that included crowdsourcing are in Table 1 below:

TABLE 1
COURSES TAUGHT THAT INCLUDED CROWDSOURCING

All entrepreneurship courses (25%)
New venture development (23%)
Entrepreneurship and innovation (10%)
New product development (8%)
Entrepreneurial mindset (8%)
New product development (8%)
Entrepreneurship (7%)
Entrepreneurship (7%)
Social enterprise practicum (6%)

As earlier discussed, co-creation, crowd creation, crowd voting, crowd wisdom, and crowdfunding are forms of crowdsourcing (Howe, 2008). Therefore, participants were asked to identify the aspects of crowdsourcing they incorporated within their classes. Results are as shared below.

TABLE 2
ASPECTS OF CROWDSOURCING

Basic information (20%)	Crowdfunding models (6%)
Crowdfunding (20%)	Market feasibility and capitalization (6%)
Rewards-based funding for new product development (8%)	Crowdfunding platforms (5%)
Crowd wisdom (8%)	Test marketing (5%)
Funding a social enterprise (7%)	Co-creation (4%)
Crowdfunding statistics (7%)	Funding marking (4%)

Participants were also asked to list the methods utilized when teaching crowdsourcing. Results are summarized in Table 3.

TABLE 3
TEACHING METHODS

Lectures (35%)	Cases (6%)	Research (5%)
Hands-on work (10%)	Real-life examples (6%)	Guest speakers (4%)
Group discussions (8%)	Videos (5%)	Website analysis (4%)
Assignments (8%)	Storytelling (5%)	Analysis of Kickstarter categories (4%)

DISCUSSION

Marketing and Crowdfunding

When asked to identify an area of improvement within courses that incorporated crowdsourcing, a participant noted, "I'm not sure students get how much pre-marketing and promoting must be done to make the crowdfunding a success." Hui, Gerber, and Greenberg (2012) also concur with the significant role of marketing, noting that marketing activities take the most time in running a crowdfunding campaign and often involves making significant contacts with individuals within their network and making contact with news media. To assist students in this area, an instructor could invite students to participate in one or more exercises to market crowdfunding. Activities may focus on ideation and product concept, product features to solve consumer needs, business plan development, video planning and editing, and sales promotion. The format can use kickstarter.com or similar online application as the infrastructure. Each activity may be a standalone activity, or they can be scheduled activities and assignments for a multi-week project. Examples of the activities follow:

Ideation and Product Concept

Faced with choosing a product for which they will develop a kickstarter.com campaign, students will participate in small groups for a 15-minute Ideation activity. Babauta makes these suggestions for an ideation exercise:

> Each student will ideate individually for five minutes. Ideation means that students will write down a possible solution to one or all the "how might" problem questions. Each idea will be written on a single post-it. Students have 15 minutes to brainstorm. This is where they will use the rules to develop as many ideas as possible. Any new idea introduced from a post-it should be placed on provided poster paper. Recorders will add additional ideas on post-it notes as well. (2015, para. 6)

Product Features and Consumer Needs

Students will identify the consumer need that their product will satisfy (Activity or Assignment, part 1). Students will review Kickstarter descriptions and the subsequent monies raised. Using fundraising results as the measure for strong descriptions AND following the Kickstarter requirements, individuals will each write their own descriptions (Activity or Assignment, part 2). Each student in the class will vote on one "best" description as-is for each group product (Activity or Assignment, part 3). Optional: Continue the group assignment to update/finalize the description based on instructor feedback and upload to Kickstarter account for each group.

Business Plan

With a template provided, student groups will create a business plan for their Kickstarter product. This can be completed as a series of smaller assignments and activities over the span of 2-4 weeks. It is important to note that cost estimates are included in this effort. After incorporating instructor feedback, students will upload the business plan to Kickstarter.

Video Planning and Editing

Students will review existing Kickstarter videos and the subsequent monies raised. Using strong fundraising results as the measure for effective videos, student groups will develop a storyboard and script, a rough-cut video, and a final cut video. This requires a few other lessons: Storyboards and scripts (why and how-to-use), shots and angles (what they are, when to use, and why to vary), how to edit video using software provided by the educational institution. Optional: Each group can be assigned to one other group to provide input. The final cut should include instructor feedback.

Sales Promotion

Kickstarter.com operates on a system of rewards for investors. These rewards often require offerings of prototypes and beta products, or specialty products related to the brand. Students will use this infrastructure to determine the appropriate sales promotion program for their Kickstarter product. Costs should also be forecasted, and the business plan (if used in class) can be updated if needed (Scholz, 2015).

High Focus on Crowdfunding

Most of the examples shared by respondents focused on the crowd funding types of crowdsourcing and did not incorporate other types of crowdsourcing such as co-creation, crowd creation, crowd voting, or crowd wisdom. Examples of exercises within other areas of crowdsourcing are listed below:

Co-Creation

For product concept topics. Students can develop online or broadcast contests for new product features or even a new product idea and make recommendations based on responses. For product design ideas, share the webpage for A' Design Award and Competition ("Furniture design," n.d.) for furniture, homewares, and home décor design. Students can also use Google Documents, Google slides, webpage development sites (like Wix, Wordpress and Adobe Spark), social media sites (like Pinterest, Instagram, or Tik Tok), or hashtags to create their contests.

Crowd Creation

For any topic in any class. Students create a shared wiki page for various class topics. Ask students to contribute credible and cited information to X number of topics throughout the semester. Take the opportunity to point out the pluses and minuses of shared wisdom. Ask students to validate some of the info in a separate assignment. Most Learning Management Systems (LMS) include wiki pages, but other formats include Google documents and Microsoft Office 365's One Drive and Sharepoint features.

Crowd Voting

For developing entrepreneurial skills like problem-solving and data analysis and practicing tools of social media engagement and marketing communication creation. Related topics also include corporate social responsibility, sustainability, and innovation. Because of the wide array of topics this activity can address, it is suitable for incorporation into an array of business and IST classes.

Students can create and analyze a digital or paper poll asking about product features, social issues, community concerns, etc. of relevance to the campus and/or local business(es), non-profit(s), and/or government agency(ies). These issues and concerns can range from traffic and parking issues to diversity and inclusion concerns to availability of services, and more. Show students a simple product feature voting "contest" like M&M's 1995 contest for their new product color ("M&M lovers," 1995) and their 2019 contest for a new flavor ("M&M'S® chocolate," 2019). Information like this article about social media polls as used for political issues (Richter, 2020) can also be shared. Formats for this activity can include various social media polls, Google forms, paper surveys, and Kaltura video with a poll (quiz) built into it.

Crowd Wisdom

a. For entrepreneurial topics such as social media engagement, product feedback, product improvement, user-generated content. These topics lend themselves easy to entrepreneurship and classes.

> Students are asked to create a digital contest or forum for posting personal pictures of products during use or of the results of using products. Examples include Sephora's Beauty Insider Community forum ("Beauty insider," n.d.) and NatGeo's photo contest (NatGeo, n.d.). Formats for collection of crowd wisdom are SM platforms, webpage development sites like Wix, Wordpress, Adobe Spark, and chatbots. As such, the reach of this exercise can extend to business classes outside of the entrepreneurial label and to non-business classes such as IST classes.

b. For entrepreneurial topics such as strategic content development, product concept and creation. innovation corporate social responsibility, social media listening, customer attitudes, and problem-solving. This activity can easily be incorporated into lesson plans for a variety of courses outside of the entrepreneurship label.

> Plan and create a social media post and/or social media monitoring assignment about a current organizational challenge or about a product's benefits and flaws in order to gather group perspective for improvement. This project can also be altered to identify a community issue and/or solution. Formats can be expanded to the use of Google Forms, face-to-face interviews or focus groups, paper dissemination and collection, video collection via Instagram or other social media sites, Box, etc.

The Factor of Time

Numerous participants indicated a limitation of time in several areas—wishing more time could be allocated to the crowdsourcing topic in current entrepreneurship classes as well as identifying time as a limiting factor to implement crowdsourcing in new entrepreneurship classes. The observation of time constraints has also been noted in teaching literature (Smith et al., 2006). To minimize the factor of time,

many of the suggestions above can be incorporated as in-class activities or assignments in conjunction with the class topic at hand. Because of this, very little time needs to be taken away from the instructor's already-developed course curriculum.

Another option for addressing the time factor is to take the learning process outside of the classroom. Extracurricular activities through clubs or events, guest speakers, community sponsors of activities and competitions can all help to increase awareness of crowdsourcing. An example of an extracurricular activity is described below.

> Create a bi-weekly workgroup run by student groups (as extra credit, part of a club, or sponsored by a campus or community partner) to ideate, plan, implement, and communicate changes that make the campus or community "greener." Consider crowdsourcing ideas via campus or community social media sites; polls and surveys via Instagram, TikTok, Facebook, Twitter, or other social media channels. Other topics to be explored in a similar manner are the use of technology in the classroom, social justice, using diversity to innovate, etc. Faculty, staff, and community leaders can also be included in the process to get appropriate buy-in and planning expertise OR presentations can be made to key campus or community stakeholders before implementing. Depending on the topic, virtually any class or club could pursue this activity. To expand the reach of crowdsourcing activities, consider tapping the expertise and networks of community business organizations like SCORE.org, SBA.gov, local municipal leadership teams, local service organizations like Kiwanis.org and Lions.org, and business owners, non-profit administrators, and government leaders.

LIMITATIONS

A limitation can be funding constraints when seeking participants (Dudovskiy, 2019). Although participation was encouraged by offering five $20 gift cards from a raffle with participants, additional financial resources could have been used to increase the number of winners or to increase the dollar value of gift cards. Additionally, with increased financial resources, more faculty lists could have been purchased and additional paid mailings to organizations' faculty members could have been conducted. Such actions may have resulted in an increase in varied participants.

Another limitation is competing time demands with participants (Dudovskiy, 2019). Even though the invitation to participate was emailed multiple times, some competing time activities may have been a limitation, such as assisting students with scheduling, grading, preparing lessons, or performing service projects. If so, then some individuals may not have participated, and some participants may not have provided thorough and thoughtful responses.

An additional limitation is that past research studies did not focus specifically on this topic (Business Research Methodology, n.d.). Accordingly, no established theoretical foundation exists to reference and expand upon during or after the completion of this study.

A final limitation is the narrow and often free crowdsourcing exercises proposed in the discussion of this paper.

- Without budget constraints or budget process limitations, additional types of exercises could have been incorporated such as those involving the purchase and use of crowdsourcing and idea management software like some of those reviewed by Software World: Quip, Miro, Crowdicity, and UseResponse ("Best idea management," 2021); and business plan software such as those recommended by NerdWallet: LivePlan, GoSmallBiz, Enloop, BizPlan, and PlanGuru (Lauckner, 2021).
- Free idea management systems such as Brightidea and Ideanote are known for their ease of use within a single institution but may not be as easily implemented for classrooms.
- Collaborations between students in information systems technology (IST), engineering, and business entrepreneurship classes may require extensive planning, but could be useful if faculty

are willing, if time and shared resources are available, and if already-voluminous course curricula can accommodate additional or different crowdsourcing exercises.
- Risk management or legal departments may prohibit students from "going live" with their Kickstarter projects.

It is important to note, however, that students do not have to "go live" on Kickstarter nor do the suggested exercises have to be offered in full for exposure to and critical thought about crowdsourcing to take place.

FUTURE RESEARCH

Although this study is an exploratory study of crowdsourcing topics and methods with undergraduate entrepreneurship courses, a similar study could be performed with graduate level entrepreneurship course. Similarly, if any of the five types of crowdsourcing were omitted, the creation of additional crowdsourcing engagement opportunities could be included that are appropriate for graduate students.

Since engineering, IST, and related STEM programs also focus on innovation and new product development, a similar study could be conducted to compare the types of crowdsourcing that are used in business vs. engineering, IST, and related STEM programs. Finally, opportunities exist to explore the use of free idea management systems like Ideanote and Brightidea. Doing so could expand the kind of activity and technology students will use as entrepreneurs or employees of entrepreneurial organizations.

CONCLUSION

This paper included a study that examined the occurrence of the five practices: co-creation, crowd creation, crowd voting, crowd wisdom, and crowdfunding within undergraduate entrepreneurship courses (Howe, 2008) since successful entrepreneurs are positively influenced by undergraduate entrepreneurship education and because crowdsourcing is so meritorious to entrepreneurs' businesses. Participants were represented by ten public universities and five private universities and included the ranks of included Professor, Associate Professor, Assistant Professor, Visiting Assistant Professor, Instructor, Lecturer, and Adjunct. Participants shared the courses they taught that included crowdsourcing, the specific aspect of crowdsourcing, the teaching method utilized, and ideas for course improvements.

For the crowdsourcing improvements that participants noted and for the crowdsourcing gaps the researchers analyzed, learning activities and strategies were developed and shared in the paper. For example, participants noted the lack of marketing to supplement crowdsourcing, so marketing activities were developed for ideation and product concept; product features and consumer needs, video planning and editing; and sales promotion. Next, based upon the researchers' analysis, many of the participants included mainly the crowdsourcing practice of crowdfunding. Accordingly, learning activities were developed to also include co-creation, crowd creation, crowd voting, and crowd wisdom. Last, since participants listed that class time was a constraint preventing them from imparting more crowdsourcing knowledge, the researchers designed the above activities to easily align with in-class topics without requiring extra time. Additionally, the researchers recommended types of extracurricular activities to complement in-class time.

Based upon the study, analysis, discussion as well as developed learning activities and strategies, the current body of knowledge for crowdsourcing and entrepreneurship can be increased, and future research can occur to expand this study. Additionally, undergraduate entrepreneurship students can have increased crowdsourcing knowledge to assist them with starting up and maintaining businesses if faculty also incorporate the learning activities and strategies developed in this paper.

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APPENDIX

Q1.
Tell us about yourself: affiliation and undergraduate entrepreneurship courses taught.
University affiliation
Title
Adjunct, visiting professor, fixed-term, tenure-track, tenured, other
Names of undergraduate entrepreneurship courses you taught at any university

Q2.
What topics have comprised undergraduate entrepreneurship courses you taught at any university?

Q3.
Crowdsourcing occurs in five practices: co-creation, crowd creation, crowd voting, crowd wisdom, and crowdfunding (Howe, 2008). Co-creation refers to the engagement of the consumer in the design and development of new products for the company. Consumers contribute to the creation process by sharing their opinion and needs as well as their creativity and problem-solving skills (Füller, 2010). Made.com is an example of co-creation. Crowd creation refers to user-generated contents, such as Wikipedia. In crowd voting, as its name suggests, organizations make an open call to a crowd to vote on a particular issue, then aggregate the collected responses to use in their decision-making process. Crowd wisdom is used in the process of organizing, evaluating, and clarifying the generated content/ideas. Other than ranking and idea generation, people can also pool their money to make things possible. GoFundMe and Kiva are examples of crowd-funding platforms in which lenders or philanthropists are connected to individuals or small businesses who need financial assistance.
Howe, J. (2008) Crowdsourcing: How the power of the crowd is driving the future of business. New York, NY: Random House.
Füller, J. (2010). Refining virtual co-creation from a consumer perspective. California Management Review, 52(2), 98-122.
Have you any experience in crowdsourcing research?

Q4.
Have you included crowdsourcing in undergraduate entrepreneurship courses taught at any university?
Which course (s)?
Which aspect of crowdsourcing?
What teaching methods were used?
What went well, from your perspective?
What went well, from students' perspective?
What could be improved from your perspective?
What could be improved from the students' perspective?

Q5.
Are there any entrepreneurship courses/topics in your university's curriculum that could benefit from the inclusion of crowdsourcing?

Q6.
Does your university have any crowdsourcing related courses in the undergraduate non-Ent curriculum?

Q7.
What benefits do you think will be achieved in applying crowdsourcing practices into the undergraduate entrepreneurship curriculum?

Q8.
What challenges or drawbacks would you anticipate from making this change in the undergraduate entrepreneurship curriculum?

Q9.
How do you think these changes in the undergraduate entrepreneurship curriculum be received by the course committee in your department?