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Entrepreneurship education for women through project-based flipped learning: The impact of innovativeness and risk-taking on course satisfaction

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Abstract

PURPOSE: *The primary aim of this research is to explore the correlation between learners' characteristics and the perceived value and satisfaction associated with Project-Based Flipped Learning (PBFL) methodologies. A secondary objective involves investigating how these PBFL methodologies can be employed to enhance the quality of entrepreneurship education for women.* ***METHODOLOGY:*** *During the first semester of 2018, a total of 80 students enrolled in the Communication Society class were engaged in a longitudinal study, involving bi-weekly online surveys prior to the semester's conclusion. The survey instruments utilized Likert-scale measurements, with a 5-point scoring system. The data acquired was subsequently analyzed using structural equation modeling, which facilitated the examination of both the pre- and post-change scores and the structural properties of their relationships with overall course satisfaction. In terms of statistical evaluation, the study employed Generalized Structured Component Analysis (GSCA), a powerful component-based SEM technique, thus ensuring a robust and academically rigorous interpretation of the data.* ***FINDINGS:*** *Our research sought to understand the effects of learners' characteristics, specifically innovativeness and risk-taking, on course satisfaction in Project-Based Flipped Learning (PBFL). We found that female learners' innovativeness positively influenced their perception of the project's entertainment and educational value, which in turn increased preference for PBFL and course satisfaction. Interestingly, risk-taking did not significantly influence perceived project value, which provides*

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insights into the role of personality traits in learning outcomes. ***IMPLICATIONS:*** *Our study invigorates entrepreneurship education theory by highlighting the key role of learner innovativeness in PBFL course satisfaction, urging a nuanced examination of personality traits in educational contexts. Further, we question the established importance of risk-taking, necessitating a critical reassessment in this domain. These pivotal theoretical contributions challenge prevailing assumptions, enrich scholarly discourse, and open new avenues for research. On the practical side, our findings emphasize the imperative of fostering innovativeness in women's entrepreneurship education. These insights underscore the need for a strategically tailored, creative learning environment, with the potential to enhance learner engagement and satisfaction significantly. In sum, our research generates transformative theoretical insights and provides actionable strategies for improving the practice of entrepreneurship education.* ***ORIGINALITY AND VALUE:*** *Our research presents a novel approach to fostering women entrepreneurs in the media sector through PBFL. This unique focus on the intersection of gender, media entrepreneurship, and PBFL distinguishes our study from existing literature. Furthermore, our findings offer educators invaluable guidance for enhancing female entrepreneurship education, thereby enriching the pedagogical landscape of this domain.*

Keywords: *entrepreneurship education, women entrepreneurship, project-based flipped learning, innovativeness, risk-taking, course satisfaction*

INTRODUCTION

In the past decade, the business landscape has experienced substantial changes, ushering in a notable increase in the participation of women entrepreneurs. This upward trend aligns with growing societal demands for enhanced gender diversity in the workforce. Indeed, women have proven to be markedly effective in the business environment, excelling in numerous emotional and social intelligence competencies (Korn Ferry Hay Group, 2017). These competencies, coupled with the value-adding influence of women in leadership roles (Adams & Ferreira, 2009), underscore the imperative to further women's representation in entrepreneurship.

Our study is situated within the context of South Korea, a country that has seen remarkable strides in technological advancement and digital media consumption. This focus on South Korea is academically significant as it offers a unique opportunity to explore the dynamics of women's entrepreneurship education in an environment that is at once technologically progressive and traditionally conservative. From a practical standpoint, understanding this context could offer valuable insights for other societies undergoing similar transitions. This paper specifically investigates the media industry, an area that has seen an unprecedented boom in South Korea and globally. The choice of the media industry is particularly apt for our study as it is a field where

creativity and innovation – key traits fostered through entrepreneurship education – play significant roles. Furthermore, with its wide influence and reach, the media industry can serve as an effective platform to encourage and showcase women's entrepreneurship. Through the lens of Project-Based Flipped Learning (PBFL), we examine the influences of learners' characteristic factors, such as innovativeness and risk-taking, on the perceived value and satisfaction of PBFL classes. Our research aims to contribute to the field of entrepreneurship education by providing insights into how PBFL can be utilized to cultivate these competencies in women, particularly in the media industry.

In the consumer market landscape, a notable shift in gender roles, particularly with women assuming responsibility for household finances, has been observed to impact purchasing decisions significantly. Female entrepreneurs, harnessing their inherent understanding of female consumer behavior, have substantially augmented the landscape of business management (Adams & Ferreira, 2009). The development of well-educated female professionals, equipped with astute business acumen, addresses the extant lacuna in potential female entrepreneurial leadership. In the global discourse, the United Nations (2020) has underscored the paramount importance of attaining gender equilibrium as a critical element for substantial and sustainable development. Workplace gender parity has been on a steady upsurge in recent decades, indicative of enhanced inclusivity. Grant Thornton's Women in Business report elucidates an encouraging increment in the proportion of women occupying executive positions globally. The representation of women in senior leadership escalated from 24% to 29% in 2018 (Thornton, 2019). It is compelling to note that corporations that have proactively fostered female leadership and encouraged gender diversity have also reaped competitive benefits and triggered economic innovation. A striking correlation between increased female representation and higher profitability was reported by Credit Suisse (2016). Businesses where women constituted at least 15% of senior managerial roles exhibited an 18% increment in profitability in contrast to those with less than 10% female representation. Furthermore, enterprises led by female CEOs registered a 19% increase in profitability. Parallelly, an MSCI study (2015) indicated that firms with a minimum of three women on their boards reported premium annual returns of equity (10.1%) and superior average valuation (1.76%) as opposed to those bereft of strong female leadership (7.4% and 1.56%, respectively).

Despite the positive strides, a significant gender disparity remains pervasive among entrepreneurs. As reported by Business Insider, the probability of women penetrating the echelons of elite business ranks stands at merely 28% compared to their male counterparts (Sherwin, 2014). Recent data depicts that a scant 6% of CEOs in Fortune 500 companies are women

(Zarya, 2017). An investigation by RobecoSAM (2015) discovered a clear underrepresentation of women in managerial roles across all industries, when juxtaposed with their workforce participation. Particularly in technology-based startups, female leadership remains woefully deficient. Within the technology hardware and equipment industry, there exists a glaring imbalance between the ratio of women at junior and senior management levels (around 10%) and their representation in the broader workforce (approximately 28%).

A comprehensive assessment by Credit Suisse of female senior managers across over 3,150 global companies spanning all industries indicated that while the upper echelons have begun to widen for women, a considerable change in the overall structure has not materialized. This inertia has been attributed, in part, to women's propensity towards stability- and harmony-oriented characteristics when making decisions in business contexts (Embrey & Fox, 1997). Conversely, it has been posited that ingrained gender stereotypes, perpetuated through education, incline women towards safer or more harmony-focused behaviors (Marinova, 2003). This polarization of viewpoints continues to be a topic of scholarly debate (Marinova, 2003; Embrey & Fox, 1997). In summation, both intrinsic attributes of women and educational factors have significant implications on their capacity to assume leadership roles in the business domain.

Within the prevailing context, the call for female entrepreneurship continues to swell, yet numerous obstacles persistently impede their progressive advancement. One potential solution to surmount these barriers resides within the educational structures of universities, specifically by fostering dedicated training programs aimed at nurturing female entrepreneurship. This approach could serve as a catalyst, bolstering women's leadership roles within burgeoning startup ecosystems. As such, the call for entrepreneurship education becomes critical, most notably amongst incoming female university students. However, in spite of these pressing necessities, the current educational landscape in South Korea remains deeply entrenched in theory-oriented pedagogy, favoring knowledge transference over experiential learning and skill acquisition.

This paradigm presents a particular deficit within the media and content fields, sectors where female entrepreneurship's significance is underscored (Byerly, 2011). In these domains, a notable void in education that cultivates managerial skills exists, indicating an urgent need to rethink and reimagine current educational practices to respond to the rapidly evolving demands of these sectors effectively.

In acknowledgement of the growing recognition of women's pivotal roles in entrepreneurship, a critical instrument of societal advancement and

economic evolution (Harris & Gibson, 2007; Bolton & Lane, 2012), it becomes imperative to address the distinct challenges and the gender disparities they encounter. It has been posited that these issues can be effectively attenuated through comprehensive, female-centric educational programs that not only offer specialized content, but also training tailored to their unique entrepreneurial contexts (Bell, 2010). In our discourse on gender dynamics in entrepreneurship, education emerges as a compelling nexus. Detailed and bespoke training for female entrepreneurs can expedite their progress towards achieving parity in a traditionally male-dominated arena, thereby fostering a culture of inclusive and successful entrepreneurship (Bell, 2010).

In the realm of entrepreneurship education, various pedagogical innovations have been trialed, with Project-Based Learning (PBL) emerging as a particularly effective tool (Pan et al., 2020). PBL's integrative approach, coupling curriculum with real-world projects, catalyzes the acquisition of knowledge and the development of competencies, thus promoting critical thinking, cooperation, and independent learning. This stands in stark contrast with the passive reception of knowledge typical of traditional learning methods (Gültekin, 2005). The focus of our investigation on PBL, rather than Project-Based Flipped Learning (PBFL), stems from PBL's broader impact and pervasive application in entrepreneurship education (Thomas, 2000; Larmer & Mergendoller, 2010).

From an academic perspective, our work provides a fresh lens through which to examine the efficacy of PBL in fostering entrepreneurship education among women—an area yet to be exhaustively researched (Okudan, 2006; Cho & Brown, 2013). The benefits of PBL are manifold, including the enhancement of practical skills such as problem-solving, communication, and organization (Fitzsimons & Turner, 2013; Konrad et al., 2020), underscoring its effectiveness as an educational methodology for nascent entrepreneurs, especially women (Dragoumanos et al., 2017).

In light of the seismic shift towards online education in the wake of the COVID-19 pandemic (Baeten et al., 2010; Barak & Dori, 2005), the pedagogical implications of PBL and the potential extension of this approach to PBFL in a hybrid educational model become of cardinal academic and practical interest. A unique facet of our study lies in its exploration of the reciprocity between entrepreneurial characteristics and the outcomes of PBL classes—a research angle that remains under-explored (Shih & Tsai, 2016; Ye et al., 2017).

The main research questions (RQs) are:

RQ1) How do students' entrepreneurial-orientated characteristics such as innovativeness and risk-taking influence their PBL adoption?

RQ2) Which entrepreneurial-orientated characteristic has a significant effect on the perceived values of PBFL courses?

RQ3) Which perceived value has a significant effect on PBFL course satisfaction?

THEORETICAL BACKGROUND

Female entrepreneurship in the new media industry

Female entrepreneurship pertains to business enterprises conceptualized, initiated, and managed by women (McAdam, 2013). This gender-specific entrepreneurial activity has been articulated in the media sectors as a "gendered phenomenon" (Jennings & Brush, 2013), underscoring the gender disparities inherent in entrepreneurial pursuits (Reynolds et al., 2004). In recent times, female entrepreneurs have emerged as proactive and increasingly influential figures within media organizations, distinguished by their characteristic innovativeness and proactiveness, key determinants of entrepreneurial business success (Hang, 2020).

The advent of technological advancements and information and communication privatization has yielded a plethora of opportunities for the inception of new media enterprises. The proliferation of new media, catalyzed by the widespread utilization of the internet, mobile, and social media technologies, has spurred multi-platform media content delivery, a trend that has garnered attention in entrepreneurship studies (Hang, 2020). These nascent conditions necessitate entrepreneurial skills as a prerequisite for professionals seeking to carve a niche within innovative media companies and new media startups. Given that content production is integral to media operations, the media industry is synonymous with the content industry (Hang, 2020). As such, entrepreneurial pursuits within news and content production demand a suite of entrepreneurial traits including innovativeness, creativity (Hang, 2020), as well as risk-taking and revitalization capabilities (Vos & Singer, 2016).

At the micro-business level, the ubiquity of social media platforms presents a fertile ground for online entrepreneurs, notably women (Mukolwe & Korir, 2016), to identify and exploit innovative market opportunities (Park et al., 2017). Historically, women entrepreneurs experienced formidable challenges in establishing a presence within traditional media, primarily due to economic and social hurdles, such as inadequate financing, limited family support, deficient training, and pervasive gender discrimination (Hossain & Rahman, 2018). In contrast, social media platforms emerge as a strategic tool

for women entrepreneurs, offering considerable advantages in advertising, marketing, and client acquisition (Ukpere et al., 2014). These benefits are largely attributed to their flexible, connective affordances and cost-effective investment (Cesaroni et al., 2017). In this vein, women entrepreneurs can optimize social media platforms by harnessing their exceptional abilities to discern customer needs, foster social relationships, and engage in interactive communication via a community-centric approach (Cesaroni et al., 2017).

Entrepreneurial orientation

Entrepreneurship represents a vital engine for wealth creation in a capitalist society (Cho & Lee, 2018), and also functions as a catalyst for social progression (Schumpeter, 1934). Entrepreneurs, distinguishable from conventional managers or employees, engage in a unique array of innovative and proactive endeavors to establish and foster business ventures. Their ultimate aim is to generate profit through the successful execution and management of these ventures. Extant research has consistently identified three core dimensions constituting entrepreneurial orientation: innovativeness, risk-taking, and proactiveness (Covin & Wales, 2018; Linton, 2019; Rauch et al., 2009).

According to Miller (1983), successful businesses often demonstrate high levels of these three traits. This triadic attribute configuration fosters a propensity for creating high financial and social business performance, thereby positioning these businesses as market leaders (Cho & Lee, 2018). Specifically, 'innovativeness' is the ability to create novel ideas and solutions, 'risk-taking' refers to the willingness to commit substantial resources to opportunities with uncertain outcomes, and 'proactiveness' implies a forward-looking perspective characterized by anticipation and action on future needs and changes. This entrepreneurial orientation is central to the execution of business strategies, and is instrumental in shaping organizational structures, processes, and outcomes.

Building upon this perspective, it becomes clear that the modus operandi of successful female entrepreneurs in media companies, discussed earlier, aligns well with these three dimensions of entrepreneurial orientation. This alignment underscores the vital role that female entrepreneurship plays in contemporary business landscapes, particularly within the dynamic and rapidly evolving media industry.

Innovativeness in women's entrepreneurship

Innovativeness serves as a critical entrepreneurial attribute, embodying the capacity to generate unique, creative ideas, and plan the fabrication

of innovative products through novel processes, enhanced supply chain strategies, and raw resource optimization (Cho & Lee, 2018). As conceptualized by Lumpkin and Dess (1996), a firm's innovativeness constitutes its proclivity to encourage and foster new ideas, creativity, and the development of pioneering products and solutions. In the realm of entrepreneurship, innovativeness underscores the active pursuit of unique and inventive ideas, along with the experimentation necessary to uncover fresh opportunities and solutions or accelerate the evolution of new technology, products, or services (Linton, 2019). As a salient characteristic of the entrepreneurial mindset, highly innovative entrepreneurs perpetually seek and identify novel business opportunities, thereby instigating new value streams for corporate development (Brockhaus, 1980). The innovative trait necessitates a substantial propensity for experimentation (Kyrgidou & Spyropoulou, 2012), serving as a catalyst for market condition transformation, thereby facilitating the identification and exploitation of emergent market opportunities (Hult et al., 2004). As such, innovativeness emerges as a critical component of entrepreneurship, engendering business value through significant changes, creative ideation, and inventive amalgamations (Cho & Lee, 2018).

Project-Based Learning (PBL) serves as an educational paradigm designed to stimulate learner creativity (Munakata & Vaidya, 2015), a factor positively correlated with innovation performance (Baron & Tang, 2011). Additionally, creativity functions as a mediator between knowledge breadth and innovation performance (Del-Corte-Lora et al., 2016). Given that PBL classes cultivate a creative milieu for students, those inclined towards innovativeness often exhibit greater interest in such courses, thereby enhancing their innovative performance. Real-world projects afford students considerable freedom and boundless opportunities to explore new ideas and deliberate on optimal solutions (Pan et al., 2019). Consequently, individuals with high innovativeness derive significant entertainment and educational value from the PBL program, thereby augmenting their PBL preference and satisfaction

H1: Innovativeness positively influences perceived entertainment in PBFL.
H2: Innovativeness positively influences perceived educational value in PBFL.

Risk-taking in women's entrepreneurship

Risk is intrinsically linked with concepts of risk–return trade-off (Linton, 2019), probability of loss (Lechner & Gudmundsson, 2014), and uncertainty tolerance (Gunawan et al., 2015). Expanding on the notion of potential loss, Miller and Friesen (1982) have posited risk-taking as the extent to which entrepreneurs

willingly commit to high-stake, precarious resource allocations that carry substantial prospects of failure.

Pioneering thinkers such as McClelland (1961) proposed that entrepreneurs, being individuals who actively pursue lofty ambitions and seek challenging tasks, are prepared to accept significant risks when the potential benefits surpass associated losses. This acceptance involves managing the inevitable hazards intrinsic to their undertakings (Brockhaus, 1980). It is thus incumbent upon entrepreneurs to recognize and mitigate business risks, even while exploiting lucrative opportunities amid high uncertainty (Cho & Lee, 2018) and substantial resource commitments (Lumpkin & Dess, 1996).

Recent studies have shown that emotional well-being and environmental support can boost motivation and entrepreneurial intent, even amid depression symptoms (Lim et al., 2020). This suggests the integral role that social capital plays in mitigating negative emotions and fostering the entrepreneurial drive among individuals. Understanding individuals' risk tolerances is of crucial importance for educators and policymakers (Xie et al., 2003). Early exposure to risk as an educational topic may foster intuitive understanding and enhance decision-making abilities in risk-charged situations (Fesser et al., 2010). Advanced skills could thus bolster students' confidence in their entrepreneurial prowess and promote successful outcomes (Cho & Lee, 2018).

Project-Based Learning (PBL) can have a profound influence on students' risk-taking behavior, given the relevance of risk-taking in entrepreneurship. The real-world business projects involved in PBL provide concrete consequences for students' performance, likely enhancing the enjoyment of high risk-takers and drawing their attention to the course content. However, it must be noted that gender differences and individual levels of risk tolerance influence perceptions of PBL (Sharma, 2015). Specifically, individuals with a greater propensity for risk-taking are likely to perceive increased entertainment and educational value in PBL, thereby augmenting their preference for and satisfaction with the program. Therefore, we posit that risk-takers will find greater value in PBL, reinforcing its relevance for fostering female entrepreneurship.

H3: Risk-taking positively influences perceived entertainment in PBFL.
H4: Risk-taking positively influences perceived educational value in PBFL.

Perceived entertainment in project-based flipped learning education

Enjoyment, as a construct, has been interpreted as an output of emotional engagement (Khalil & Rintamaki, 2014), encapsulating positive affective

responses such as pleasure, approval, and fun (Scanlan & Simons, 1992). This reflects an individual's perceived entertainment value (Khalil & Rintamaki, 2014). Within an educational context, enjoyment corresponds to the degree to which learners perceive their academic activities as gratifying and fulfilling (Davis et al., 1992). Crucially, perceived enjoyment reflects students' cognitive immersion during the learning experience, a pivotal element of academic engagement. An increased enjoyment of the learning experience can lead to a more intense absorption in educational content with, consequently, augmented learning outcomes (Gomez et al., 2010). This underscores the essential link between perceived enjoyment and effective learning.

Project-Based Learning (PBL) methodologies have been demonstrated to improve educational outcomes compared to traditional programs (Boaler, 1999). This is attributed to the creation of an environment that is perceived as "enjoyable, entertaining, and meaningful" (Gültekin, 2005), which fosters academic success. The Buck Institute for Education (n.d.) further asserts that PBL is "an effective and enjoyable way to learn" that cultivates competencies necessary for future success in academia, career, and civic life.

The experiential, project-solving process inherent in PBL amplifies the entertainment factor in learning. This divergence from the traditional, teacher-centered instruction fosters a richer and more engaging learning experience, which subsequently influences students' preference for Project-Based Flipped Learning (PBFL). In summation, the positive correlation between perceived enjoyment and educational performance highlights the potential of PBFL to enhance academic outcomes, thereby reinforcing the pedagogical value of such an approach, particularly in the context of fostering female entrepreneurship.

H5: Perceived entertainment has a positive impact on PBFL preference.

Perceived educational value in project-based flipped learning education

Perceived value was first conceptualized by Zeithaml (1988) as an overall consumer evaluation of a product's utility, gauged by perceptions of received benefits and given costs. Sheth et al. (1991) further expanded this concept by proposing five fundamental categories of consumption values: functional, social, emotional, epistemic, and conditional. Education scholars Hannaford et al. (2005) and Unni (2005) suggested that these principles of perceived value can be applied to educational services, providing valuable insights for educators to refine their offerings and enhance students' learning

experiences, consequently improving student satisfaction (LeBlanc & Nguyen, 1999; Ledden et al., 2007; Stafford, 1994).

Project-Based Learning (PBL), as conceptualized by David (2008), is viewed as a practical problem-solving approach. Students are given autonomy to select project topics, actively acquire necessary materials, and deliver the completed work. Teachers in this setting transition from conventional content mediators to facilitators, supporting and inspiring student-driven learning (Henry, 2012; Hong, 2018). This shift enhances not only functional value by promoting independent practical skills but also delivers emotional value via perceived entertainment.

Furthermore, PBL fosters social learning, as students have to master crucial interpersonal skills such as communication, negotiation, and collaboration (Bell, 2010). Research has shown that PBL effectively enhances these competencies in higher education settings (Kim & Cho, 2017), mainly by requiring students to manage group dynamics during discussions. This process also boosts students' creative thinking abilities, facilitated by brainstorming, mind mapping, and other idea generation methods (Hong, 2018). Thus, the perceived value derived from PBL directly influences the educational experience's overall worth.

In line with Cronin et al.'s (2000) and McDougall & Levesque's (2000) arguments that perceived value precedes satisfaction, it can be inferred that the perceived educational values inherent in a PBL course may elevate students' preference for and satisfaction with Project-Based Flipped Learning (PBFL). The multidimensional aspects of PBL—ranging from functional to social, emotional, and epistemic values—serve as robust pillars for fostering a high perceived educational value, further strengthening the pedagogical foundation of PBFL.

H6: Perceived educational value has a positive impact on PBFL preference.

Project-based flipped learning education preference and course satisfaction

Satisfaction, within the consumer behavior domain, is traditionally conceptualized as an affective response dictated by the perceived discrepancy between pre-consumption expectations and post-consumption performance, as outlined by Engel et al. (1995) and Oliver (1980). This concept is anchored in the principles of social psychology's balance theory, which posits satisfaction as a reflection of the equilibrium achieved between individual experiences and the associated emotional values (Roh, 2002). Moreover, satisfaction

is broadly construed as the degree of goal fulfillment, harmonizing human needs and desires (Jung & Ko, 2009).

Extrapolating this concept to the educational realm, we introduce the term "class satisfaction". This is defined as the degree to which a specific class meets or exceeds students' expectations and encompasses a myriad of elements, including academic performance, participation, and overall learning experience. It represents a complex matrix of both the effectiveness and the enjoyment derived from the class (Kim, 2015). It stands to reason that educators and educational institutions perennially strive to balance the dual objectives of catering to learners' needs and expectations and fulfilling the pre-determined educational goals of the lecture. However, traditional teaching models—predominantly unilateral in nature—often fall short of maximizing class satisfaction. Their primary limitation stems from the fact that they provide inadequate opportunities for students to express their opinions, intentions, or exchange constructive feedback on educational content (Choi, 2004). This deficit is largely redressed by pedagogical methodologies like Project-Based Learning (PBL). By their inherent design, PBL environments promote active student engagement and enable direct contributions to the learning content, thereby fostering a higher degree of satisfaction compared to conventional teaching methods (Yoo et al., 2020).

Empirical evidence further corroborates the efficacy of PBL in enhancing class satisfaction. For instance, Go's (2021) exploratory study, which leveraged a project-based flipped learning approach in a design class, elicited increased learning motivation and instruction satisfaction, especially with regard to student interaction, among a cohort of 40 students. Thus, the recognition of the entertainment and educational values inherent in PBL has the potential to amplify students' preference for the course, thereby heightening the overall course satisfaction. The comprehensive satisfaction derived from PBL, underpinned by its integration of diverse educational values and its facilitation of active, learner-centric engagement, reiterates its potency as a transformative pedagogical strategy in contemporary education.

H7: PBFL preference is positively associated with overall course satisfaction.

Guided by the comprehensive literature review, all the proposed hypotheses have been consolidated into a conceptual framework, designated as Figure 1, to guide the testing of the structural model empirically.

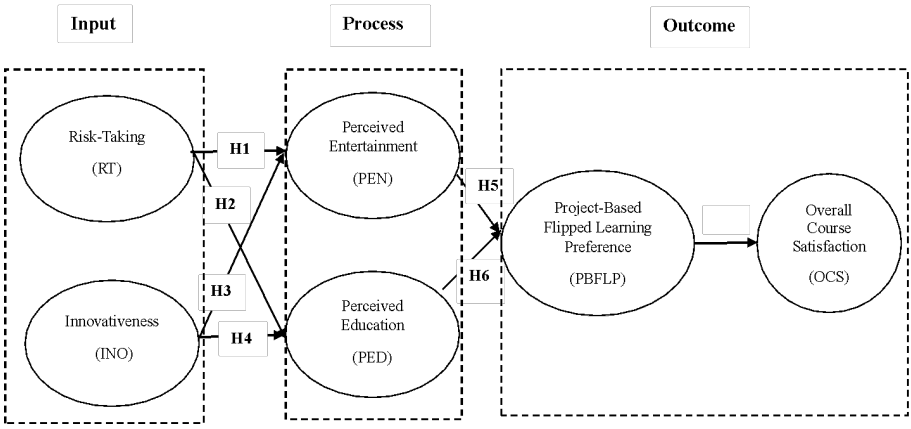

Figure 1. Conceptual framework guiding the empirical research

METHODOLOGY

Data collection

Over a semester, we facilitated a specialized program related to the media business as part of the Communication Society class in a particular university. This program was intended to emulate a practical entrepreneurial environment to foster the entrepreneurial orientation (EO) abilities of potential female entrepreneurs. We administered bi-weekly online surveys to the 80 students who enrolled in the class during the first semester of 2018. The surveys consisted of six constructs: innovativeness, risk-taking, perceived entertainment, perceived educational value, course preference, and satisfaction, all of which were measured using empirically validated scales from existing literature. Responses were recorded on a 5-point Likert scale, with (1) signifying 'strongly disagree' and (5) 'strongly agree'. Supplementary information about the respondents, including student type (domestic or international), year of study, previous experience with project-based learning (PBL), and age was also collected. For privacy protection, all personally identifiable information was anonymized during the data analysis process. After excluding two unreliable responses, we performed our analysis on the remaining 78 valid responses.

Measures

To operationalize the constructs, all the multiple-item measurement scales used in this study were adapted from previous studies. The scales are retrieved from Lumpkin and Dess' (1996) and Covin and Wales' (2012) studies to measure the innovativeness (5 items) and risk-taking (5 items) of learners. A sample item for innovativeness is "I try to be innovative and creative in any situation." A sample item for risk-taking is "I prefer risky but high-performing projects." Perceived entertainment was operationalized using a 4-item scale (e.g., "The project experience was interesting"), and perceived education was measured with four items (such as, "I have acquired new knowledge through the project") as suggested by Pine and Gilmore (1998) and Kwon et al. (2010). To measure course preference, we adopted a 5-item scale proposed by Guglielmino et al. (1987). Finally, course satisfaction is measured using five items retrieved from Joo and colleagues (2008) and Kim (2006). Sample items for course satisfaction are "I am generally satisfied with this lecture" and "I want to recommend this class to others." Each item was measured on a 5-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (5). Table 1 shows the detailed scale items and the descriptive statistics of items.

Table 1. Items and descriptive statistics

Construct	Items	Mean	SD
Risk-Taking (RT)			
RT1	I prefer risky but high-performing projects.	3.40	1.02
RT2	I think decisive and courageous action is essential to achieving professional goals despite potential risks.	3.67	0.97
RT3	I prefer to start a business in a high-growth and risky business rather than a low-growth and safer business.	3.49	0.97
RT4	I have a risk-taking sensitivity that raises my expectations for success more than my fear of failure.	3.58	1.00
RT5	I think risk-taking is needed in order to discover uncertain but potential opportunities.	3.84	0.69
Innovativeness (INO)			
INO1	I try to be innovative and creative in any situation.	3.78	0.82
INO2	When undertaking tasks, I actively seek innovative ideas and improvements.	3.74	0.94
INO3	When problems arise, I place greater value on creative and innovative solutions than traditional methods.	3.79	0.82
INO4	I have a leadership style that emphasizes research, development, and innovation.	3.62	0.91

Construct	Items	Mean	SD
Innovativeness (INO)			
INO5	Despite the possibility of failure, I encourage the development of innovative projects.	3.68	0.88
Project Entertainment (PEN)			
PEN1	The project experience was interesting.	3.85	0.89
PEN2	This project got me in a positive mood.	3.79	0.93
PEN3	I enjoyed learning through this project.	3.79	1.03
PEN4	I gained diverse experiences through this project.	4.05	0.97
Project Education (PED)			
PED1	I have acquired new knowledge through the project.	4.12	0.88
PED2	The project activities satisfied my intellectual curiosity.	3.84	0.97
PED3	The project will be helpful for other people's learning as well.	3.99	0.92
PED4	I could learn about media/communication through the project experience.	4.01	0.89
Project-Based Flipped Learning Preference (PBFLP)			
PLP1	Flipped learning classes are more convenient than traditional lecture classes.	4.00	1.01
PLP2	I have memorized lessons in the flipped learning class for a longer time than in the traditional lecture classes.	3.71	1.05
PLP3	The flipped learning class increased my interest in the subject.	3.67	0.99
PLP4	I am generally satisfied with the flipped learning class.	3.99	0.94
PLP5	I want to take flipped learning classes in the future.	3.93	1.02
Course Satisfaction (CS)			
CS1	I am generally satisfied with this lecture.	3.90	0.97
CS2	I want to recommend this class to others.	4.00	0.97
CS3	I think this lecture supported my academic development.	4.14	0.86
CS4	I think this lecture was helpful for my overall university life.	4.01	0.89
CS5	I want to take any additional or in-depth classes related to this course.	3.73	1.07

Note: SD = standard deviation.

Statistical analysis

Generalized Structured Component Analysis (GSCA) was utilized to analyze the data (Hwang & Takane, 2014; Jung et al., 2018). GSCA incorporates both measurement models, which involve the observed variables, and structural models, which capture the relationships between latent constructs, into

a unified framework. This comprehensive approach allows for a thorough examination of the data and its underlying structure.

GSCA falls under the category of component-based Structural Equation Modeling (SEM) methods (Cho et al., 2023). Unlike traditional SEM approaches, GSCA is particularly advantageous in situations where sample sizes are limited, and strict assumptions about data distribution cannot be made (Jung et al., 2018; Hwang et al., 2010). This flexibility makes GSCA suitable for research studies that involve small samples but require a comprehensive analysis of the relationships between variables.

While GSCA is a relatively recent approach compared to other SEM techniques, it has gained acceptance and recognition within the research community. It has been successfully applied in various fields, including social sciences, business, and psychology, to examine complex relationships and identify latent constructs (Hwang & Takane, 2014; Hwang et al., 2021; Cho et al., 2023; Jung et al., 2021).

For the analysis in this study, GSCA Pro (Hwang et al., 2023) was used. GSCA Pro is specialized software designed specifically for GSCA analysis. It provides tailored features and functionalities for model estimation, hypothesis testing, and assessing model fit and validity. By utilizing GSCA Pro, we were able to explore and interpret the data more comprehensively, leading to a deeper understanding of the relationships between variables and enhancing the rigor of the analysis. Basic demographic information on student type (domestic or international), year, prior experience with PBL (yes/no), and age were also analyzed.

RESULTS

The demographic composition of our study participants exhibits a diverse range of backgrounds. Domestic students comprised approximately 60.3% of the total respondents, whereas the remaining 39.7% constituted international students. This diverse blend offers valuable insights, combining both localized and global perspectives in our examination of Project-Based Learning (PBL) outcomes.

In terms of academic progression, the majority of participants were found to be in their initial year of study, with first-year students accounting for 64.2% of the total. Students in their second year of study made up 24.7%, while those in their third and fourth years represented 12.3% and 6.8% respectively. Moreover, prior exposure to PBL methods varied among our respondents. A notable 68.1% of the students had previously engaged with PBL experiences, leaving 31.9% who had not, which underscores the

increasing pervasiveness and importance of PBL methodologies in the contemporary educational landscape. Participants' ages ranged from 19 to 26 years old, with a mean age of 20.44 years and a standard deviation of 1.61. This age distribution is reflective of the traditional undergraduate population, offering a representative sample for this study.

Table 1 delineates the descriptive statistics of the construct items. Intriguingly, all construct means exceeded the midpoint of 3, and standard deviations fluctuated within the range of 0.69 to 1.07. This data variation is indicative of the diverse responses and perceptions of our participants, thereby enriching our understanding of PBL and its role in promoting entrepreneurial skills among female students.

Table 2 provides the loading estimates for the items along with their standard errors (SEs) and 95% bootstrap percentile confidence intervals (CIs) for the lower bounds (LB) and the upper bounds (UB). The CIs were calculated using 1,000 bootstrap samples. For interpretation, a parameter estimate was assumed to be statistically significant at the 0.05 alpha level if the 95% CI did not include a value of zero. The results showed that all the loading estimates were statistically significant, indicating that all those items were good indicators of the constructs. Table 2 also provides the average variance extracted (AVE), composite reliability, and Cronbach's alpha (or coefficient). The AVE is used for evaluating a construct's convergent validity for all items on each construct. The AVEs for all constructs exceed 0, 0.05 alpha, indicating an acceptable convergent validity (Fornell & Larcker, 1981). The composite reliability also showed reasonable reliability for every variable, exceeding the desired threshold of 0.70 (Hair et al., 2019). It also showed that all Cronbach's α surpassed the suggested threshold of 0.70 (Nunnally & Bernstein, 2010), indicating reasonable reliability for the measurement model.

The hypothesized model showed an overall goodness of fit index with a GSCA (FIT) value of 0.694, indicating that the model accounted for 69.4% of the total variance of all the items and their corresponding constructs. Table 3 provides the estimates of path coefficients in the structural model along with their SEs and 95% CIs.

The results showed that innovativeness had a statistically significant and positive impact on project entertainment (H1 = 0.59, SE = 0.16, 95% CI = 0.17–0.84) and project education (H2 = 0.47, SE = 0.15, 95% CI = 0.11–0.70). In turn, project entertainment and project education had a statistically significant and positive influence on PBFL preference (H5 = 0.57, SE = 0.15, 95% CI = 0.21–0.84; H6 = 0.28, SE = 0.16, 95% CI = 0.02–0.63). Moreover, PBFL had a statistically significant and positive impact on course satisfaction (H7 = 0.75, SE = 0.07, 95% CI = 0.63–0.87).

Table 2. Estimates of loadings and reliability measures

Construct	Items	Estimate	SE	95%CI LB	95%CI UB	AVE	Composite reliability	Cronbach's α
Risk-Taking (RT)						0.74	0.93	0.91
	RT1	0.91	0.03	0.85	0.95			
	RT2	0.83	0.05	0.71	0.91			
	RT3	0.84	0.04	0.75	0.91			
	RT4	0.84	0.04	0.76	0.91			
	RT5	0.78	0.05	0.66	0.86			
Innovativeness (INO)						0.71	0.92	0.90
	INO1	0.92	0.02	0.88	0.95			
	INO2	0.93	0.02	0.89	0.96			
	INO3	0.86	0.04	0.78	0.93			
	INO4	0.83	0.05	0.72	0.92			
	INO5	0.75	0.09	0.50	0.86			
Project Entertainment (PEN)						0.87	0.96	0.95
	PEN1	0.95	0.02	0.91	0.98			
	PEN2	0.95	0.02	0.88	0.97			
	PEN3	0.94	0.02	0.89	0.97			
	PEN4	0.88	0.03	0.81	0.94			
Project Education (PED)						0.76	0.93	0.89
	PED1	0.84	0.05	0.75	0.92			
	PED2	0.90	0.02	0.84	0.94			
	PED3	0.88	0.03	0.82	0.93			
	PED4	0.86	0.03	0.80	0.91			
Project-Based Flipped Learning Preference (PBFLP)						0.79	0.95	0.93
	PLP1	0.74	0.07	0.62	0.86			
	PLP2	0.90	0.03	0.84	0.95			
	PLP3	0.90	0.03	0.81	0.94			
	PLP4	0.94	0.02	0.90	0.97			
	PLP5	0.84	0.05	0.75	0.93			
Course Satisfaction (CS)						0.76	0.94	0.92
	CS1	0.89	0.03	0.84	0.94			
	CS2	0.92	0.02	0.89	0.95			
	CS3	0.92	0.02	0.89	0.95			
	CS4	0.85	0.05	0.74	0.93			
	CS5	0.86	0.04	0.77	0.92			

However, risk-taking did not show a statistically significant impact on project entertainment and project education. That is, Hypotheses 3 and 4 were not supported due to the presence of zero values in CIs. (H3 = 0.08, SE = 0.16, 95% CI = –0.20–0.44; H4 = 0.23, SE = 0.17, 95% CI = –0.06–0.57).

Table 3. Estimates of path coefficients

Hypothesis	Estimate	SE	95%CI LB	95%CI UB
H1: INO → PEN	0.59	0.16	0.17	0.84
H2: INO → PED	0.47	0.15	0.11	0.70
H3: RT → PEN	0.08	0.16	-0.20	0.44
H4: RT → PED	0.24	0.17	-0.06	0.57
H5: PEN → PLP	0.58	0.15	0.21	0.84
H6: PED → PLP	0.28	0.16	0.02	0.63
H7: PLP → CS	0.75	0.07	0.63	0.87

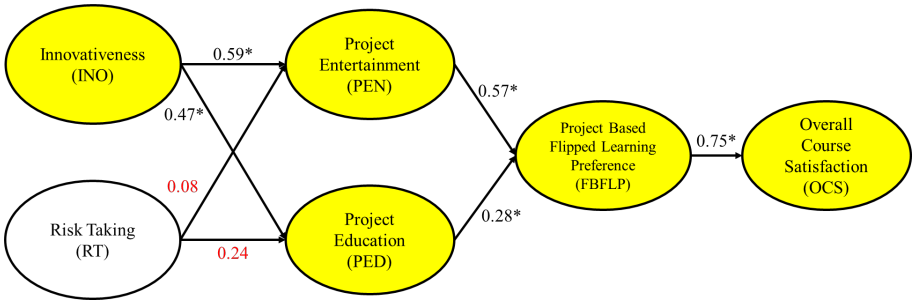

Figure 2 . Results for the Structural Equation Model

DISCUSSION

Our study probed the implementation of Project-Based Flipped Learning (PBFL) within the specialized context of female entrepreneurship education. While the academic community has acknowledged PBFL's potential in promoting optimal learning outcomes, there exists a noticeable knowledge deficit concerning the role of distinctive learner traits—such as gender and other individual characteristics—in shaping course satisfaction. Our research addresses this lacuna in the existing literature.

We sought to illuminate the influence of distinct characteristics prevalent among female students on their embracement and proclivity

towards the PBFL pedagogical model. Our empirical findings underscored the significant influence of innovativeness on female students' perceived project value and the sense of engagement they derived from the learning process. The heightened perception of project-based engagement and educational value was subsequently manifested in a stronger predilection for the PBFL pedagogical approach. This observation is congruent with prior research, such as Kang and Lim's study (2021), which emphasized the pivotal role of flipped learning activities in enhancing the immersion and interest levels among mature e-learners, culminating in elevated course satisfaction. Our findings also demonstrated a direct link between a preference for the PBFL methodology and enhanced course satisfaction among female students. This implies that learners who exhibit robust innovative tendencies derive substantial pleasure and value from the PBFL course, culminating in a strong preference for this pedagogical approach and an increase in overall course satisfaction.

Interestingly, we noted a deviation when considering the factor of risk-taking, commonly recognized as integral to women's entrepreneurship. Our data indicated that this variable did not significantly influence perceived project engagement and educational value. This suggests that within the controlled confines of an academic environment, the variable of innovativeness assumes greater relevance than risk-taking. Learners with a propensity towards risk-taking could perceive classroom-based projects as merely hypothetical scenarios with no real-world consequences attached to riskier decisions. This could potentially dilute the perceived entertainment and educational value derived from PBL courses, subsequently impacting overall course satisfaction.

To engage learners with a risk-taking propensity more effectively, we propose that educators could incorporate elements of tangible consequences, such as rewards or punitive measures tied to their academic performance. This could potentially foster heightened engagement with PBFL courses. In conclusion, our research provides empirical support to the characteristic approach in predicting course success and emphasizes the significant influence of learners' innovativeness on their course preference and satisfaction. This study, therefore, adds a nuanced layer of understanding to the factors influencing the efficacy of the PBFL approach in female entrepreneurship education.

CONCLUSION

The initiation and sustainment of female entrepreneurship are of paramount importance in the rapidly evolving new media industry. The field of media content is inherently aligned with the unique capabilities often associated with women, and there has been a substantial surge in the participation of highly skilled women in the workforce. As reported by Byerly (2011), in Europe, women constituted an impressive majority of junior and senior professional roles in news reporting, with percentages at 78.5% and 70.6% respectively. Moreover, senior female professionals in Europe were approaching parity in key roles such as senior writer, anchor, and producer, occupying 41% of these positions.

Despite these strides, there remains a paucity of instances where women have spearheaded and maintained leadership in media companies. Unraveling the causes behind this disparity is essential. Accordingly, this study holds profound relevance as it seeks to interrogate the characteristics and conditions influencing women's trajectories in entrepreneurship education, offering crucial insights for facilitating their successful foray into media entrepreneurship. This research carries significant implications on the impact of characteristic factors, notably innovation, within the realm of female entrepreneurship education in the Project-Based Flipped Learning (PBFL) context. Our findings challenge the long-held notion of risk-taking as a critical element, underlining instead the potent influence of innovation on course preference and satisfaction within PBFL.

Innovativeness emerges as a key determinant in shaping the perceived educational and entertainment value of the project, leading to an increased inclination and satisfaction with flipped learning. This implies that by refining educational strategies to inspire innovation, we can motivate students to engage more proactively. Such findings echo the research of Huang et al. (2022), whose study showed how business simulation games in a flipped classroom could enhance students' cognitive and behavioral engagement, consequently fostering skills such as creativity, problem-solving, and critical thinking.

The compelling need to bolster innovativeness takes on a distinctive importance in the context of new media entrepreneurship education for women. This is attributed, in part, to the distinctive nature of the media field. Consequently, refining educational content with an emphasis on entrepreneurial innovativeness can prove pivotal and beneficial in PBFL classes. Huang et al. (2022) reiterate this sentiment, demonstrating that female entrepreneurs' innovativeness can significantly boost entrepreneurial performance, with factors like opportunity recognition and psychological capital mediating this relationship.

Our research findings have applicability beyond academia, extending to real-world business practices. PBFL courses create a fertile environment for entrepreneurially oriented individuals, particularly women, to articulate their interests and hone their skills. In the digital era, the growth of social media has become a powerful tool for online entrepreneurs, especially women (Mukolwe & Korir, 2016), enabling them to uncover innovative market opportunities (Park et al., 2017). Despite the challenges faced by small-scale women entrepreneurs in traditional media (Hossain & Rahman, 2018), social media provides a strategic platform for them to market, advertise, and draw clientele (Ukpere et al., 2014) due to its flexibility, connectivity, and cost-effectiveness (Cesaroni et al., 2017).

Successful implementation of PBFL, however, also hinges on educators' abilities alongside learners' traits. Teachers, apart from having deep-seated knowledge, require strong interpersonal skills to maintain an active and vibrant classroom and to establish effective student communication (Wang, 2017). The scarcity of educators well versed in the PBL approach emphasizes the need for focused training and experience building in this pedagogical method (Efstratia, 2014).

Our study is not without limitations. For instance, the sample size and demographics may not represent the entire population of female PBFL students, as it was conducted on a limited population of Korean university students. Further, the uncontrolled environment in which the study was conducted leaves room for external influences on students' performance and course preference.

Notwithstanding these limitations, our research findings lay the groundwork for more comprehensive exploration into nurturing female entrepreneurs in the media sector through PBFL, expected to be a pivotal component in entrepreneurship education. Future studies should engage with diverse samples across varied segments to enhance our understanding of PBFL and women's entrepreneurship education.

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Abstrakt

CEL: *Głównym celem tego badania jest zbadanie korelacji między cechami uczniów a postrzeganą wartością i satysfakcją związaną z metodologiami odwróconego uczenia się opartego na projektach (PBFL). Drugim celem jest zbadanie, w jaki sposób metodologie PBFL można wykorzystać do poprawy jakości nauczania przedsiębiorczości kobiet.* ***METODYKA:*** *W pierwszym semestrze 2018 r. łącznie 80 studentów zapisanych na zajęcia Społeczeństwo komunikacyjne zostało zaangażowanych w badanie podłuż-*

ne, polegające na przeprowadzaniu co dwa tygodnie ankiet online przed zakończeniem semestru. Instrumenty badawcze wykorzystywały pomiary w skali Likerta z 5-punktowym systemem punktacji. Uzyskane dane zostały następnie przeanalizowane przy użyciu modelowania równań strukturalnych, co ułatwiło zbadanie zarówno wyników przed, jak i po zmianie oraz strukturalnych właściwości ich związków z ogólnym zadowoleniem z kursu. Jeśli chodzi o ocenę statystyczną, w badaniu wykorzystano uogólnioną analizę składowych strukturalnych (GSCA), technikę SEM opartą na składnikach, zapewniając w ten sposób solidną i naukowo rygorystyczną interpretację danych. ***WYNIKI:*** *Nasze badania miały na celu zrozumienie wpływu cech uczniów, w szczególności innowacyjności i podejmowania ryzyka, na zadowolenie z kursu w odwróconym nauczaniu opartym na projektach (PBFL). Odkryliśmy, że innowacyjność uczących się kobiet pozytywnie wpłynęła na ich postrzeganie rozrywkowej i edukacyjnej wartości projektu, co z kolei zwiększyło preferencje dla PBFL i zadowolenie z kursu. Co ciekawe, podejmowanie ryzyka nie wpłynęło znacząco na postrzeganą wartość projektu, co daje wgląd w rolę cech osobowości w efektach uczenia się.* ***IMPLIKACJE:*** *Nasze badanie ożywia teorię nauczania przedsiębiorczości, podkreślając kluczową rolę innowacyjności ucznia w zadowoleniu z kursu PBFL, zachęcając do szczegółowego badania cech osobowości w kontekstach edukacyjnych. Ponadto kwestionujemy ustaloną wagę podejmowania ryzyka, co wymaga krytycznej ponownej oceny w tej dziedzinie. Te kluczowe wkłady teoretyczne podważają dominujące założenia, wzbogacają dyskurs naukowy i otwierają nowe ścieżki badań. Od strony praktycznej nasze ustalenia podkreślają imperatyw wspierania innowacyjności w nauczaniu kobiet przedsiębiorczości. Spostrzeżenia te podkreślają potrzebę strategicznie dopasowanego, kreatywnego środowiska uczenia się, które może znacznie zwiększyć zaangażowanie i satysfakcję uczniów. Podsumowując, nasze badania generują transformacyjne spostrzeżenia teoretyczne i zapewniają praktyczne strategie poprawy praktyki nauczania przedsiębiorczości.* ***ORYGINALNOŚĆ I WARTOŚĆ:*** *Nasze badania przedstawiają nowatorskie podejście do wspierania kobiet-przedsiębiorców w sektorze mediów poprzez PBFL. To wyjątkowe skupienie się na przecięciu płci, przedsiębiorczości medialnej i PBFL odróżnia nasze badanie od istniejącej literatury. Co więcej, nasze odkrycia oferują nauczycielom wskazówki dotyczące doskonalenia edukacji kobiet w zakresie przedsiębiorczości, wzbogacając w ten sposób krajobraz pedagogiczny tej dziedziny.*

Słowa kluczowe: *nauczanie przedsiębiorczości, przedsiębiorczość kobiet, odwrócone nauczanie oparte na projektach, innowacyjność, podejmowanie ryzyka, satysfakcja z kursu*

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Authorship contribution statement

Seung-chul Yoo: Writing and Planning. **Tu Anh Truong**: Data Collection. **Kwanghee Jung**: Method and Analysis.

Conflicts of interest

The authors declare no conflict of interest.

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