



Exploring pre-service visual art teachers' competitiveness through porter's five forces model

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Abstract

The primary objective of this cross-sectional study was to explore the degree to which 117 pre-service visual art teachers' competitiveness within the education field. A self-reported competitiveness scale (six items distributed between three factors) was designed and validated by the authors based on the focal points of Michael Porter's Five Forces framework. Additionally, the respondents' digital competence was assessed as an auxiliary criterion of educator attractiveness in the art education domain. Both competitiveness and digital skills measurements yielded mediocre scores. Regression analysis showed that respondents' competitiveness perceptions were predicted neither by digital skills level nor by socio-demographic characteristics such as age, gender, rural or urban background, marital status or whether the student was a graduate or undergraduate. The present study highlights the need for understanding of how visual art majors perceive the sector and evaluate competitiveness among visual art students which itself indicates its sizable contribution to educational research. Other researchers can employ the competitiveness questionnaire introduced to gain deeper insights into the topic or related subjects.

Keywords: Competitive advantage, Digital competence, Education, Five forces framework, Students, Survey.

Citation | Koshkinbayeva, N., Shagataeva, Z., Utepova, A., Taukebayeva, K., & Kurmantayeva, S. (2023). Exploring pre-service visual art teachers' competitiveness through porter's five forces model. *Journal of Education and E-Learning Research*, 10(3), 389-396. 10.20448/jeelr.v10i3.4726

History:

Received: 24 February 2023

Revised: 17 May 2023

Accepted: 1 June 2023

Published: 7 June 2023

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Publisher: Asian Online Journal Publishing Group

Funding: This study received no specific financial support.

Authors' Contributions: All authors contributed equally to the conception and design of the study.

Competing Interests: The authors declare that they have no conflict of interest.

Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained.

Ethical: This study followed all ethical practices during writing.

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Contribution of this paper to the literature

This is the first study to gauge competitiveness among visual art majors. The paper proposes an instrument to capture the perceptions of future visual art educators about their survivability in the profession. This study represents a new literature for research involving competitiveness, education and digital competence.

1. Introduction

In today's rapidly changing world, the need for competitiveness is particularly high. Globalization, the intensifying crisis in the world economy, the digital revolution, COVID-19 and the proliferation of new technologies have created an environment in which individuals and organizations must constantly adapt and evolve in order to succeed (Birkinshaw, 2022). Pre-service teachers will soon face the need to compete with other candidates for positions in the same subjects since labor market rules do apply to educators.

The digital revolution has had a profound impact on the way we live and work bringing both benefits and drawbacks to employment. On the one hand, it can lead to job creation and growth; it can also cause disruption that will impact employment. As the industry shifts towards 4.0, the changing demographics of technical skill can challenge labor inequalities and make business models even more oriented to competitiveness (Anshari, Syafrudin, & Fitriyani, 2022; Grabowska & Saniuk, 2022; Koutroukis, Chatzinikolaou, Vlado, & Pistikou, 2022).

The 4.0 industry is characterized by the integration of advanced technologies. This new epoch will encourage individuals to be more adaptable, creative and teachers must be ready to teach these skills to students. Educators will need to be familiar with the latest technologies in order to provide students with relevant and updated information. Quispe and Alecchi (2021) predicted that in the post-COVID era "blended, hybrid or fully online programs" may become more widespread which would impose the corresponding demands on all participants. The widespread availability of technology and the internet has made it possible for individuals to access information and communicate with others from anywhere in the world. This has created new opportunities for learning and collaboration. Teachers are expected to play a key role in implementing transformed learning by designing teaching models (Zhao, 2022). Teachers will have to possess the ability to create engaging and interactive lessons that make use of digital tools and resources. Additionally, they will need to be able to use technology to communicate with students and parents, manage assignments and provide feedback which may be quite pressing (Alhothali, 2021). Besides, online education is challenging for teachers because it calls for accommodating various teaching styles (Liu & Zhang, 2022).

In addition to technological advancements, globalization has also made teaching more competitive. Students will be exposed to various cultures and ideas as a result of increased international trade and travel. Teachers therefore must be proficient enough to teach students about different cultures, help them develop an understanding of global issues and teach students how to communicate and collaborate with people from different cultures (Zheldibayeva, 2023).

Potential teachers should be equipped with new skills and knowledge. They are expected to use technology to enhance their teaching and connect with students, be familiar with the latest technologies and have an understanding of different cultures and global issues. They should be capable of teaching students the skills they will need to succeed in the 4.0 industry such as adaptability, creativity and innovation. However, research evidence highlights that the education systems nowadays suffer from insufficiently qualified teachers who lack pedagogical mastery and in-depth knowledge (Basilotta-Gómez-Pablos, Matarranz, Casado-Aranda, & Otto, 2022). In particular, a systematic literature review (Zhao, Llorente, & Gómez, 2021) scrutinized a total of 33 eligible studies spanning 2015 to 2021 and inferred that most of the university teachers had a basic level of digital competence.

1.1. Rationale for This Research

Teachers play a crucial role in creating and sustaining a competitive advantage for their students. They must be able to adapt to the changing needs of the world and continuously improve their practice. Visual art is constantly evolving with new technologies and techniques emerging all the time. In order to ensure their future competitiveness, pre-service visual art educators should be able to adapt to the new realities in advance and continuously improve their practice.

This study views competitiveness as being attractive in the sector or market (e.g., by meeting or exceeding performance standards) rather than vanity or a proclivity towards competition. Cogent research on teacher competitiveness is scarce in the domain of visual art education. Investigating the competitiveness of pre-service visual art teachers is valuable as it can provide insight into their readiness and ability to effectively teach and inspire their students. This can help to ensure that their students will have access to high-quality visual art education and can contribute to enhancing the overall quality of visual art education. Additionally, understanding the competitiveness of pre-service visual art teachers can also help to identify areas where additional support or resources may be needed to help these teachers succeed in their roles. The development of teacher training programs, support systems and educational policies in the visual arts fields could yield valuable insights. A questionnaire based on competitiveness could be useful to explore this attribute in pre-service visual art teachers and identify potential opportunities or challenges for them as they enter the field. Additionally, a test assessing the pre-service teachers' digital literacy would assist in evaluating their readiness to adapt to and incorporate technology in their teaching methods which is becoming increasingly important in the field of visual art education.

1.2. Research Questions

This non-experimental study aims to answer three questions:

Research question 1: What perceptions do pre-service visual art teachers have about their competitiveness?

Research question 2: What are the digital competence levels of pre-service visual art teachers?

Research question 3: Do pre-service visual art teachers' digital competence and socio-demographic characteristics predict their self-reported competitiveness?

1.3. Theoretical Framework

The theoretical framework of this research was built on the five forces model (Porter, 2008) developed by Michael Porter. Porter's framework looks at five dimensions that affect the competitive environment of a given industry and the capacity of an entity to create and sustain a competitive advantage (Caballero-Morales, 2021; Isabelle, Horak, McKinnon, & Palumbo, 2020). The five competitive forces are: the threat of new entrants, the threat of substitution, the bargaining power of buyers, the bargaining power of suppliers and rivalry among existing competitors.

This study employs a simplified iteration of Porter's five forces framework to assess the competitiveness of pre-service visual art teachers in the sector specifically in terms of their resilience towards new entrants and potential substitutes. This framework is restricted to the evaluation of individual market attractiveness and viability, thereby omitting dimensions that cover the bargaining power of buyers and suppliers and the intensity of competition within the industry. Here is a brief description of each factor of Porter's model and how we adjusted some of them for pre-service visual art teachers to obtain a scale measuring their competitiveness.

The threat of new entrants embraces competing with new participants that may enter the field. Items were built that measure how exposed the respondent feels to competition from newcomers.

The threat of substitution refers to the availability of alternative products or services that can meet the same needs as the industry's offerings. Items were developed that assess the potential for substitute forms of visual art education such as online courses or self-study materials.

The bargaining power of buyers considers the extent to which buyers can impact the price and quality of the services. Both of these variables were covered in the items we elaborated on to evaluate how much influence learners or their parents have on the respondent.

The bargaining power of suppliers deals with the extent to which suppliers can affect the industry by controlling the price and quality of inputs. This variable was not included in the scale because it was deemed infeasible in our case to extrapolate this facet to the domain of teaching.

Rivalry among existing competitors refers to the intensity of competition among existing participants in the industry. This factor was not included in the scale as the focus of the present study pertained to the competitiveness of individuals rather than the situation within the sector.

2. Methods

2.1. Ethical Consideration

The research ethics board of the corresponding author's university certified the study project (approval number 02-371). Participation was voluntary. All participants were informed about the research goal and expressed their consent to being recruited.

2.2. Instruments

2.2.1. Digital Competence

Unlike competitiveness, digital competence may be evaluated objectively to estimate it exactly with a test that implies choosing the correct answer. However, the majority of publicly available digital competence tools rely on the respondent's perspective on how advanced they are in using digital technology (Mattar, Ramos, & Lucas, 2022) and the few extant objective measurements "mainly address basic technical, informational and problem-solving skills" (Van Laar, Van Deursen, Van Dijk, & De Haan, 2020). It was impossible to find the perfect measure for the construct of interest. We opted for an online digital skills self-assessment that is freely available on the Algonquin College of Applied Arts and Technology website (algonquincollege.com/library). It assesses the basics of digital literacy, skills in applying text processing software and knowledge regarding the internet and communication security. The test comprises 14 multiple-choice questions, each with at least one correct answer. The correct choice was awarded one point, otherwise, the individual received 0 points. Thus, the cumulative score ranged from 0 (low level of digital competence) to 14 (high level of digital competence). This test is far from perfect but it is still not the worst choice among the alternatives because it addresses specific parameters is visually appealing and is concise.

2.2.2. Competitiveness

First, we scrutinized the literature to identify thematic areas of the five forces framework based upon which we composed the item pool with the above mentioned adjustments. Since Porter's model was reduced to three components, it was decided to name our scale three forces. The draft had a total of seven items distributed between three sub-scales, namely (i) threat of new entrants, (ii) threat of substitution and (iii) bargaining power of buyers. However, the second round of our collective review of the tool found two semantically coincident items, one of which was finally removed.

For additional expertise, we contacted three business incubator managers in Astana, each of whom reviewed the items and agreed that the questionnaire is adequate for pre-service teachers, addresses competitiveness exactly and is sufficiently accurate. The pre-final scale was supplemented with socio-demographic questions and then piloted among eight undergraduate students to ensure comprehensibility and applicability. The students completed the form and unanimously confirmed that they were not confused while completing the form as the instructions for completion and the items were unambiguous. A definitive version of the three forces scale was accepted by consensus (mean Osterlind index of 0.93). Thus, the three forces scale contains six items in the three factors and uses a Likert-type scale with five response categories (1 = "extremely" to 5 = "not at all"). Items are originally in Russian but for this paper, they were translated into English by a certified translator. The items are listed in Table 1.

Table 1. Item composition of the three forces scale.

Sub-scale	Item
Threat of new entrants: Italy	TNE1. How concerned are you about competition from other visual art teachers entering the market?
	TNE2. How do you feel the need to differentiate your teaching methods and techniques in order to stand out in the market?
Threat of substitution	TS1. How much of a threat do you believe substitute products or services such as neural networks can pose to your presence in visual art education?
	TS2. How much of a threat do you believe new alternative forms of art education such as online tutorials or workshops can pose to your services as a visual art teacher?
Bargaining power of buyers	BPB1. How do you feel that you have limited control over the quality of your instruction due to the demands of students or their parents?
	BPB2. How do you feel that the level of price sensitivity among your students or their parents can affect the demand for your services as a visual art teacher?

Since the assessment of digital competence was only performed among those who completed the three forces, it was necessary to preclude a scenario in which the digital competence test was completed by those who avoided the competitiveness test. The three forces form included a field for the participant identification phrase to prevent the risk of using the same identifier for more than one subject; the surveyed had a random sequence of symbols at least 8 characters long. Moreover, the survey collected socio-demographic information such as respondents' gender, age, marital status, rural or urban background and whether the student was a graduate or undergraduate. A continuous age variable was used. In this sample, the split-half index (even-odd with the Spearman-Brown formula) was 0.810 suggesting good internal consistency of the scale. Skewness and kurtosis were within the -1.5 to 1.5 interval suggesting data symmetry.

2.3. Participants and Procedures

The content of the competitiveness scale items assumes that the respondent is currently teaching or at least has prior experience in teaching visual arts. Therefore, this served as a criterion for inclusion in this study. We contacted the heads of departments at five universities located in four cities in Kazakhstan (Taraz, Aktobe, Uralsk, and Almaty) to explain the essence of the study to them. The heads were asked to pass the invitations to participate in the survey to students majoring in visual arts education who met the inclusion criteria. Finally, all departments expressed their agreement and 141 students consented to fill out the questionnaires. Then the three forces were uploaded to Google Forms in late September 2022. By early December, a total of 133 complete questionnaires had been collected and the survey had been deactivated. A link to Google Meet was then disseminated. In the next six days, 117 participants attended online meetings (each person once). By checking the identification phrase, the research team member made sure that the student had completed the three forces so the respondent received the link to the digital skills self-assessment and shared his or her display while taking the test. The latter is in English; hence the online meeting organizer translated it into Russian for those who could not understand the content of the test. Participants were not given the exact name of the test in advance, so as to preclude the chance to try the test antecedently in order to scout out the correct answers. Only 117 responses from those who completed both forms are reported for the competitiveness scale in this study. Thus, the research sample was made up of 117 university visual art education students enrolled in bachelor's and master's degree programs.

2.4. Data Analysis

The mean, standard deviation (SD) and confidence interval were calculated to answer the first and second research questions. An important preliminary step was to verify the structural validity of the three forces, so we examined whether their item scores fit our hypothesized three-dimensional model. A confirmatory factor analysis was run with three-factor structure models: a unidimensional version, a two-factor solution combining the threat of new entrants and the bargaining power of buyers' sub-scales and the three-dimensional construct. The models were then compared based on the following goodness-of-fit indicators: the Tucker-Lewis index, comparative fit index, Akaike information criterion, ratio of chi-squared to the degree of freedom, standardized root mean square residual and root mean square error of approximation. A structural equation model path diagram was generated for the optimum model to display its standardized factor loadings. Only items with factor loading values above or equal to .40 were recognized as eligible for inclusion in a factor as is standard practice. Prior to the confirmatory factor analysis, Bartlett's test of sphericity and the Kaiser-Meyer-Olkin test were conducted and the results allowed considering the item responses suitable for factor analysis since the Kaiser-Meyer-Olkin value was above .60 and Bartlett's test produced a p-value below .05 as commonly required. To address the third research question, ordinary least squares regression analysis was performed in order to determine whether socio-demographic characteristics (independent variables) could predict the three forces scores as an outcome variable. The R programming environment was used in all analyses.

3. Results

3.1. Sample Characteristics

The participants (67.52% female) were aged between 21 and 48 years (mean = 29.30, SD = 7.06). Students with teaching experience could participate in the survey shifting the sample towards graduate students (86.30%) while undergraduate students made up 13.70% of the sample. As for marital status, 71.79% were married or partnered while 28.21% were single or divorced. 68.38% of participants had an urban background and 31.62% had a rural background.

3.2. Factorial Structure of the Three Forces

Table 2 juxtaposes the values of the model to fit the three different structures of the competitiveness scale. The data suggest that the one-factor model had the worst performance whereas there were no appreciable

differences between the two-factor and three-factor solutions, so preference was still given to the prior three-dimensional model.

Table 2. Confirmatory factor analysis of the three forces scale (n = 117).

Model-fit criterion	Recommended value	Unidimensional model	Two-factor model (TNE and BPB merged)	Three-factor model
χ^2/df	$\leq 5.0^a$	4.01	1.04	1.05
CFI	$> 0.90^a$	0.771	0.997	0.998
TLI	$> 0.90^a$	0.619	0.995	0.994
RMSEA (90% CI)	< 0.08 (Upper bound of CI below 0.10) ^b	0.160 (0.108, 0.217)	0.019 (0.0, 0.111)	0.020 (0.0, 0.123)
SRMR	$< .10^c$	0.085	0.038	0.032
AIC	The lower, the better	1,714.392	1,688.625	1,690.584

Note: a = source: Cai et al. (2022); b = source: Machado, Grilo, Rodrigues, Vaz, and Crosby (2020); c = source: De La Torre, Spruijt-Metz, and Farias (2022). CI = Confidence interval. χ^2/df = The ratio of chi-squared to the degree of freedom. CFI = Comparative fit index. TLI = Tucker-Lewis index. RMSEA = Root mean square error of approximation. SRMR = Standardized root mean square residual. AIC = Akaike information criterion.

The factor analysis indicated that the six-item and three-dimensional models were well supported by participants' responses. As seen in the standardized structure of the three-factor scale in Figure 1, items TNE1, TS1, and BPB1 load onto the corresponding factors non-significantly. However, factor loadings for all six items were above the .40 cut-off, so the hypothetical factorial solution is deemed confirmed.

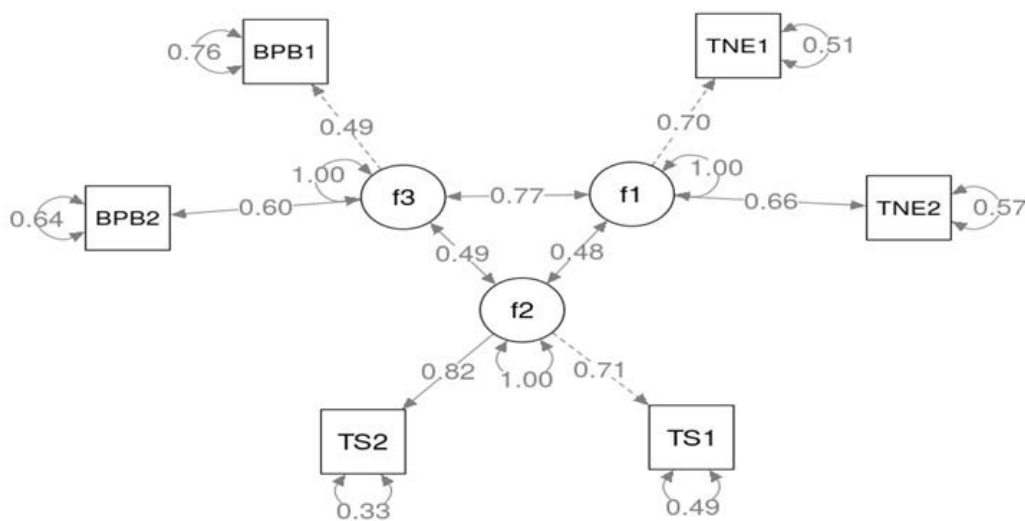


Figure 1. Standardized three-factor structural model of the three forces questionnaire (n = 117). F1 (threat of new entrants), F2 (threat of substitution) and F3 (bargaining power of buyers). Box = observed variable (item). Oval = latent variable (factor). One-way arrow = factor loading. A straight double-headed arrow indicates the covariance between factors. A curved double-headed arrow adjacent to an oval indicates the covariance of a factor with itself. A curved double-headed arrow adjacent to the box indicates the variance of an item not explained by its factor.

3.3. Competitiveness

Research question 1: What perceptions do pre-service visual art teachers have about their competitiveness?

Figure 2 illustrates participants' scores on the three forces scale. The lowest scores were in the subscale devoted to confidence in the face of competitors entering the domain. The highest scores were in the factor covering dependence on customer decisions. Overall, the level of respondents' self-perceived competitiveness can be tentatively regarded as mediocre.

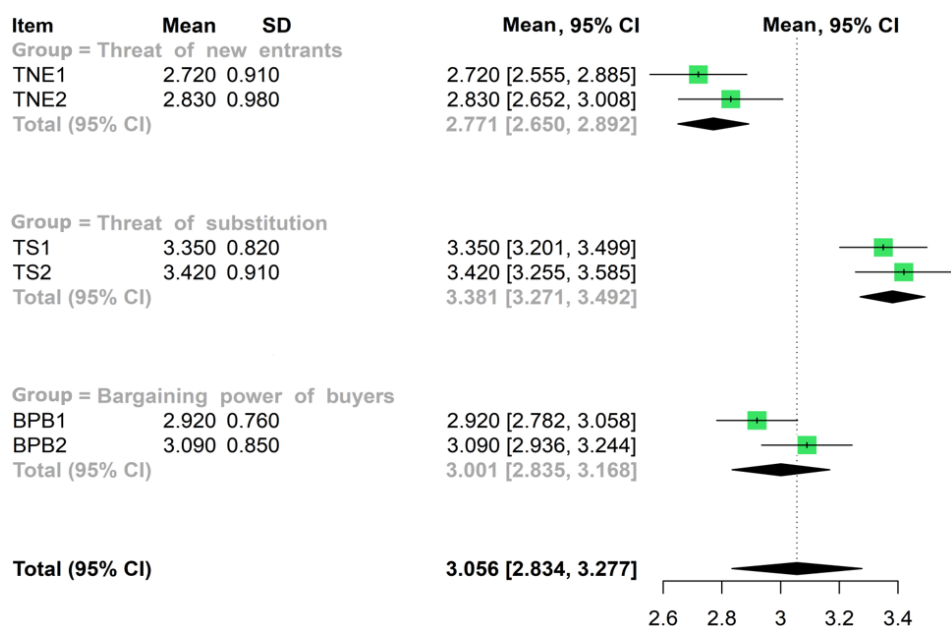


Figure 2. Item scores for the three forces scale (n = 117).

3.4. Digital Competence

Research question 2: What are the digital competence levels of pre-service visual art teachers?

As regards the digital skills test, the mean summary score was 9.83 (SD = 2.16) which can be conditionally interpreted as the level of digital literacy being slightly above medium.

3.5. Predictors of Competitiveness

Research question 3: Do pre-service visual art teachers' digital competence and socio-demographic characteristics predict their self-reported competitiveness?

Neither digital competence nor socio-demographic factors showed considerable OLS coefficients and regardless of the model, the variables did not explain virtually any portion of the variance in the competitiveness estimates as indicated by R^2 (see Table 3). Therefore, it can be concluded that these factors did not contribute to the participants' perceived competitiveness.

Table 3. Ordinary least squares regression coefficients for variables potentially predicting the competitiveness scale scores (n = 117).

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Age (Years)	-0.024 (0.012)	-0.024 (0.012)	-0.022 (0.012)	-0.023 (0.012)	-0.023 (0.012)	-0.023 (0.012)
Graduate student		0.047 (0.244)	0.097 (0.251)	0.105 (0.252)	0.106 (0.253)	0.106 (0.253)
Urban background			-0.163 (0.184)	-0.161 (0.185)	-0.160 (0.186)	-0.160 (0.186)
Married				-0.097 (0.187)	-0.099 (0.189)	-0.099 (0.189)
Female					0.019 (0.185)	0.019 (0.185)
Digital competence						0.043 (0.096)
Constant	3.419 (0.355)	3.369 (0.438)	3.404 (0.440)	3.483 (0.468)	3.464 (0.508)	3.464 (0.508)
R^2	0.035	0.035	0.041	0.044	0.044	0.044

Note: Standard errors are in parentheses. The reference categories are undergraduate student, rural background, single, and male.

4. Discussion

Most research has examined competitiveness as per companies (Akhund & Abbas, 2023; Algarni, Ali, Leal-Rodríguez, & Albort-Morant, 2023; Chikán, Czakó, Kiss-Dobronyi, & Losonci, 2022; González-Serrano, Dos Santos, Sendra-García, & Calabuig, 2023; Noorliza, 2023; Ogutu et al., 2023) and governments (Consoli, Costantini, & Paglialunga, 2023; Fernández, Martínez, & Martín, 2022; Ge & Liu, 2022; Sun, Li, & Ouyang, 2022) whereas the issue of teacher competitiveness is virtually unaddressed in literature. The existing research mostly revolves around the employability of pedagogues. For instance, some studies performed in the United States suggest that academically skilled college graduates (Master, Sun, & Loeb, 2018) and graduates of teacher preparation programs that have good partnerships with schools and communities (Yang et al., 2021) are more likely to get jobs in educational institutions. The scarce attention paid to this subject can be explained by the intricacies that the researcher has to face there: unlike corporations and states, there are no established solutions to calculate market competitiveness for individuals and when it comes to pedagogy, it is not even clear how to approach such competitiveness components as input, output and so forth. In this paper, a modest attempt is made to extrapolate some of the semantic units of competitiveness to those who are just entering the teaching profession. In doing so, we were guided by Porter's competitiveness framework which we applied to students and tried to analyze the results across socio-demographic factors and digital skills. This effort produced a tool for measuring the competitiveness of full-time faculty. However, we have not been able to construct a model that illuminates the variables that predetermine how strong an individual's position in his or her educational sector will be. Teacher competitiveness is a more complex phenomenon than we might have anticipated and other sophisticated factors such as personality could play a role in determining it. *Apropos*, self-representation theory advocates that self-concept is shaped both by individual factors and context (Xie, Meng, Li, & Liu, 2023). Some evidence (Weissman, Elliot, & Sommet, 2022) signifies that attributes including self-efficacy guide competitiveness perceptions in the vein that people low in self-efficacy may believe that their abilities and resources are not enough to handle the challenges they face or are supposed to face, leading to a lack of confidence in their skills. This can cause them to perceive their colleagues' performance as a threat resulting in excessive social comparison and a sense that the work environment is eminently competitive. The current study does not cover self-efficacy because we assumed that the results of measuring self-efficacy would roughly mimic respondents' competitiveness data. However, future research could examine whether this personality trait adds to an individual's subjectively rated competitive attractiveness.

The perspective on teacher market competitiveness is complicated. A recent study on employees (Reese, Garcia, & Edelstein, 2022) revealed that individuals with high competitiveness strive to outperform others even when situational pressures are weak. Due to their personality traits, these subjects tend to perceive their environment as highly competitive. Our study participants' responses were influenced by competitive pressure in their professional field and it may be promising to study the competitive behavior of pre-service teachers in specific artificial situations created by an experimenter.

In the contemporary world, digital competence is one of the critical competencies constituting one's expertise and it plays a significant role in molding competitive advantage. In science, technology, engineering and mathematics digital skills are rare. Therefore, the results of the digital skills test we administered are hardly surprising. Students' perceived competitiveness did not appear to vary markedly with digital skill level which indicates that digital competence contributes little to the phenomenon of interest. Comparisons with past evidence cannot be drawn because we failed to find other studies that went into associations between digital and perceived competitiveness in any sense which denotes the theoretical significance of this study.

However, we can infer that competitiveness is not about having a high level of digital competence or being from a certain socio-demographic background, it is perhaps a more dynamic concept that involves a broad range of environmental, social and personal factors. In terms of educational theories, the findings outlined could be seen as supporting a constructivist view of learning and competitiveness. According to this perspective, competitiveness is not a fixed characteristic but is instead constructed and reconstructed through interaction with the environment

and with others. This perspective suggests that the competitiveness of pre-service visual art teachers is determined by a variety of experiences and interactions not just digital competence or socio-demographic characteristics. Social learning theory may also provide some insight into our findings. This theory suggests that individuals learn through observation, modeling and reinforcement from others in their environment. In this context, the competitiveness of pre-service visual art teachers may depend on the role models and mentors they face in their professional and educational experiences as well as the expectations and norms of the visual arts community. Finally, connectivism may provide another perspective on this research. This theory suggests that learning occurs through the creation and maintenance of networks of information and knowledge. In this context, the competitiveness of pre-service visual art teachers may parallel the connections they establish with other individuals and resources in the visual arts community along with the extent to which they are ready to integrate technology and digital media into their teaching practice.

Digital competence and socio-demographic factors may not have explained competitiveness in our study but they are still important factors to consider. Digital competence is becoming increasingly important in many fields such as education and pre-service visual art teachers who have strong digital skills will likely be better equipped to compete in the job market. Similarly, socio-demographic factors such as age and gender may alter the experiences and views of pre-service visual art teachers and may affect their competitiveness in different ways.

5. Research Implications

From a practical perspective, our findings highlight the complexity and multi-dimensionality of competitiveness which points to the need for pre-service visual art teachers to be equipped with a range of skills, experiences and resources that can enhance their competitiveness in the job market. From a theoretical standpoint, this investigation suggests that educators' competitiveness should be further looked at from a multi-disciplinary perspective that incorporates elements of business strategy, education and psychology. It is important to continue exploring the factors that contribute to competitiveness among pre-service visual art teachers and to develop more comprehensive and nuanced measures of this construct that could be used to guide research and professional development efforts in this field.

6. Limitations and Future Research Areas

Concerning the limitations of this study, its sample is restricted to pre-service visual art teachers. Nevertheless, our findings offer avenues for further research in other disciplines. Future studies could apply the three forces and collateral variables in a broader range of educational settings. It seems intriguing to later replicate our study by extending the set of measurements to include personality traits like self-efficacy. In future research on competitiveness among pre-service visual art teachers, it might be useful to consider additional socio-demographic variables that have been shown to have an effect on competitiveness in other fields or professions. For example, apart from urban-rural origins, it would be worth clarifying the respondent's current location given that educators who are located in urban areas may have more access to resources and opportunities which could influence their competitiveness. In addition to the socio-demographic variables, it may also be necessary to consider additional factors that could impact competitiveness such as personal networks. Moreover, further investigation is necessary to determine whether digital skills are related to how someone perceives their capabilities in the sector. Another limitation of the study is the small sample size. The next steps will involve similar research on a larger scale and across different languages and cultures. This would help to determine the generalizability of the results.

7. Conclusion

In this study, ideas from Porter's five forces framework were imported into a questionnaire that informs us on how much pre-service art teachers feel they can stay relevant in their profession. The scale was validated across a multi-center Russian-speaking sample in Kazakhstan and proved to be reliable. Participants' digital skills were also medium (9.83 out of 14). However, regression analysis found that neither digital competence nor socio-demographics conditioned the competitiveness scores. Therefore, repeating our study with extended models for predicting competitiveness levels appears to be a prospective future research direction.

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