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# Examining the Influence of Online Social Networks and MOOCs on Collaborative Practices among TVET Teachers: The Mediating Role of Interpersonal Trust

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**ABSTRACT**

**This study examines the impact of online social networks (OSN) and Massive Open Online Courses (MOOCs) on collaborative practices among vocational training educators, focusing on the mediating role of interpersonal trust. Using a quantitative research design, Structural Equation Modeling (SEM) analyzed data from 343 Technical and Vocational Education and Training (TVET) teachers via a survey assessing MOOC usage, OSN, teacher collaboration, and interpersonal trust.**

**Findings indicate a significant positive relationship between OSN and MOOCs, suggesting their potential to enhance collaborative learning environments. However, a negative direct effect of OSN on teacher collaboration reveals challenges that hinder effective engagement. Importantly, interpersonal trust is identified as a crucial mediator, highlighting the necessity of fostering trust among educators to improve collaboration and knowledge sharing.**

**The research addresses a gap in understanding how MOOCs can enhance collaboration among TVET teachers and improve student outcomes, emphasizing the importance of integrating OSNs and MOOCs into vocational training frameworks while cultivating a culture of trust. Ultimately, the study suggests that leveraging OSNs and MOOCs, alongside interpersonal trust, can transform collaborative practices, benefiting both educators and students. Future research should explore the complexities of these relationships, especially barriers to collaboration and effective strategies for utilizing online networks in vocational training.**

***Keywords***- Online Social Network, MOOCs, Interpersonal Trust, Teacher collaboration.

## I. INTRODUCTION

In recent years, social networking services (SNS) have emerged as a global phenomenon, attracting individuals eager to share their opinions and experiences (Heidemann et al., 2012). These platforms enable users to create and disseminate content across blogs, social networking sites, and online-sharing platforms, positioning users as information creators, commenters, or reviewers within social communities (Chang et al., 2017). Social media's reach extends beyond professionals and older adults, becoming integral to the educational sector, where both students and teachers actively utilize these tools. The benefits of social media in education include enhanced collaboration and communication among participants, access to educational resources, and the promotion of creativity and idea sharing).

The rapid growth of social media has transformed online discourse, with platforms like

Facebook, Twitter, and academic networks shaping public engagement across various domains, including education, politics, and technology (Asur & Huberman, 2010). In higher education, social networks are recognized for their ability to enhance relationships, improve learning motivation, provide personalized resources, and develop collaborative skills (Kolan & Dzandza, 2018). As noted by King and Sen (2013), the pervasive influence of social networks extends to educational contexts, offering new opportunities to enrich teaching and learning experiences (Alabdulkareem, 2015). Research has demonstrated that immediate feedback, facilitated by social networks, significantly enhances learning outcomes (Dunlosky et al., 2013; King & Sen, 2013) and raises awareness about reliable information sources (Camus et al., 2016; Alabdulkareem, 2015).

Social network sites enable the formation of online groups centered around specific interests, allowing educators to create course-based networks that foster student engagement. The promise of online social networks lies in their capacity to facilitate communication and collaboration (Imlawi et al., 2015). The growing significance of social networks in higher education is further underscored by the rise of Massive Open Online Courses (MOOCs), which are viewed as transformative educational technologies that provide accessible, high-quality content (Schaffhauser, 2012). However, MOOCs face challenges in maintaining participant engagement, often linked to insufficient social presence and community feeling (Antonaci et al., 2019). Understanding learner behavior is crucial in this context, as MOOCs leverage social networks to promote knowledge generation over mere consumption (Alyoussef, 2023; Mellati et al., 2020; Imlawi et al., 2015).

Effective utilization of social media and networks in education hinges on building interpersonal trust, fostering collaboration among educators and students, and enhancing engagement and knowledge generation (Hosen et al., 2021; Gurjar, 2020; Rath et al., 2020). Interpersonal trust is increasingly recognized as a vital component within online social networks (Martinelli Watanuki et al., 2019). Social media platforms have transformed communication, facilitating information sharing and collaboration, particularly in educational settings, where they have become integral to personal and professional lives (Naeem, 2019; Duane & Corcoran, 2018; Mondahl & Razmerita, 2014). Trust in these platforms is essential for improving learning outcomes and raising awareness about reliable information sources (Chow & Chan, 2008).

In the context of MOOCs, social networks are pivotal in fostering participant engagement and creating a sense of community, thereby empowering students in their learning journey (Rulinawaty et al., 2023; Brouns et al., 2017). This is particularly relevant for Technical and Vocational Education and Training (TVET) (Rosly et al., 2018). TVET plays a crucial role in developing a skilled workforce and enhancing job readiness (Ismail et al., 2018). Social networks can support TVET by facilitating collaboration, resource sharing, and connections between learners and industry professionals (Olelewe et al., 2020; Grech & Camilleri, 2020).

Trust is a fundamental element influencing social behavior in both online and offline contexts (McKnight et al., 2002). In social media, trust shapes social relationships and enhances user engagement (Yoo & Hyan, 2016). Given the increasing interaction within online social networks, users can cultivate rich engagement based on interpersonal trust, facilitating collaborative efforts (Ronzhyn, 2023; Hatamleh et al., 2023; Bente et al., 2004).

Prior studies have advocated for the use of Social Networking Sites (SNS) as alternatives to Learning Management Systems (LMS) (Wheeler et al., 2008; Jenkins et al., 2006). Chen and Bryer (2012) noted that well-facilitated SNS can enhance student learning by fostering connections. Despite the potential benefits of social media in education, there is limited research on the role of interpersonal trust in facilitating collaboration among teachers within online environments, particularly in MOOCs and its impact on student outcomes in TVET institutions. Further investigation into MOOCs for teacher professional development and effective design is also warranted (Rosly et al., 2018; Yousef et al., 2014; Margaryan et al., 2015).

This research aims to explore the impact of interpersonal trust within online social networks in MOOCs, specifically examining its influence on teacher collaboration and student outcomes. By addressing the gap in existing literature, the study seeks to clarify the role of trust in promoting effective collaboration among educators and enhancing learning experiences in the TVET sector.

The study contributes to the body of knowledge by investigating interpersonal trust within online social networks in MOOCs. Understanding trust dynamics in educational contexts is crucial, as it directly influences collaboration, engagement, and overall learning experiences. The focus on the TVET sector is particularly relevant due to the increasing adoption of online education in vocational training. Findings from this research can inform educators, administrators, and policymakers, guiding the development of strategies to enhance teacher collaboration, build trust, and improve student outcomes.

By examining the relationship between teacher collaboration and student outcomes, the study addresses a critical aspect of online education. Collaborative efforts among teachers can lead to the sharing of best practices and the creation of supportive learning environments. Insights into how interpersonal trust affects collaboration in MOOCs will provide actionable recommendations for improving online education quality.

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Lastly, the study's emphasis on MOOCs, known for their scalability, adds to its significance. The findings will have implications for TVET institutions and broader educational contexts that utilize MOOCs, informing the design and implementation of effective online learning environments that prioritize trust and collaboration to maximize student success.

## II. LITERATURE REVIEW

Social networks can be broadly defined as a set of actors and the ties representing relationships—or lack thereof—among them (Goldenberg et al., 2009; Brass et al., 1998). These networks connect individuals through various relationships such as friendship, affiliation, and financial exchanges. According to Porter Liebeskind et al. (1995), these networks are formed by individuals engaging in exchanges grounded in shared norms of trustworthy behavior. The relationships between actors, known as "ties," are based on interdependencies like common interests or financial transactions (Trusov et al., 2010). Social networks emerge in diverse contexts, including personal and professional spheres, serving purposes such as sharing information and making connections.

Brown and Reingen (1987) examined the structure of interpersonal networks, arguing that different types of links facilitate information transmission between subgroups within the network. Social networks significantly influence how information reaches individuals and how they interact for various purposes (Goldenberg et al., 2009; Van den Bulte & Wuyts, 2007). While the study of diffusion and adoption is beyond this review's scope, it underscores the significance of social networks.

Successful social networks rely on user interaction at the interpersonal level, fostering an unwritten social contract among community members (Boyd, 2008). For a social network to thrive, intermediaries are required for collaborations to occur (Caverlee, Lui, & Webb, 2008). Users typically engage in two primary activities within a social network: content creation and content consumption (Chen & Fong, 2010), which form the basis for information sharing.

Historically, social networks were established through physical nodes, imposing limitations on collaboration due to geography and time (Boyd & Ellison, 2009; Hoffman & Novak, 1996). According to Hoffman and Novak (1996), these limitations constrained the regularity and duration of engagements. The advent of the internet as a communication platform has diminished these constraints, allowing for enhanced interpersonal online trust and facilitating cooperation across geographical boundaries. Online social networks (OSNs) are defined by Boyd and Ellison (2007) as web-based services that enable individuals to create public or semi-public profiles, establish connections with other users, and view these connections within the system (Grabner-Kräuter et al., 2015).

Trust plays a significant role in interpersonal relationships, organizational behavior, conflict management, and business dealings (Sun, 2010). However, the literature lacks a single comprehensive definition of trust. Mayer et al. (1995) identify five factors contributing to the ambiguity surrounding the definition of trust, including issues related to the relationship between trust and risk, and the absence of specificity in trust referents. McKnight et al. (1998) highlight that trust is perceived differently across disciplines, complicating the search for a unified definition.

To simplify the analysis of trust, researchers often categorize its characteristics into qualifications, significance, and dimensions (Seppanen et al., 2007). However, these terms are sometimes used interchangeably, leading to confusion. Rempel et al. (1985) define trust as "a confident expectation in an online context that one's vulnerabilities will not be exploited." Kuriyan et al. (2010) provide a social perspective, defining trust as "a property of relations between two or more social elements." Wang and Emurian (2005) outline four widely accepted attributes of trust: the trustor, trustee, vulnerability, and both subjective and objective assessments.

In the context of online collaboration, individuals choose a relational or instrumental dimension of trust to initiate communication. Trust in OSNs is influenced by various factors, including dispositional trust, first perceptions of trust-relevant attributes, and knowledge about the OSN and its members (Lewicki & Bunker, 1995; Ratnasingham, 1999; Shapiro et al., 1992). Identification-based trust, characterized by mutual empathy and shared values, represents the highest level of trust in interpersonal relationships (Grabner-Kräuter, 2009).

In OSNs, scholars are encouraged to recognize the relevance of different sources of trust at various stages of its development, rather than emphasizing disparities between perspectives (Kramer, 1999; McKnight & Chervany, 1996). Interpersonal trust is defined as an expectation that the word or promise of another can be relied upon, involving a willingness to be vulnerable based on the expectation of specific actions (Rotter, 1971; Mayer et al., 1995).

Massive Open Online Courses (MOOCs) are defined as online courses that offer open access to instructional content, typically in the form of videos, problem sets, and forums, delivered through platforms designed to accommodate a large number of participants (Ismail et al., 2018; Baturay, 2015). MOOCs represent a transformation of Open Educational Resources (OER) into structured courses that include instruction, learning activities, assessments, and other elements. They have gained significance in global higher education and lifelong learning, recognized for their innovative

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potential (Baturay, 2015; Kim et al., 2015). However, literature on MOOCs fostering pedagogical knowledge development, particularly in the context of Technical and Vocational Education and Training (TVET), is limited. While research in Asia has explored students' experiences and challenges with MOOCs, there is a lack of investigation into their use for teacher professional development and effective design (Abhishek et al., 2023; Alhazzani, 2020; Rosly et al., 2018).

Various studies have examined the potential and challenges surrounding MOOCs (Chen, 2013; Liyanagunawardena et al., 2013; Milligan & Littlejohn, 2014; Yousef et al., 2014; Shrader et al., 2016). Nonetheless, the specific focus on MOOCs for teacher professional development has been limited (Brouns et al., 2017; Laurillard, 2016; Margaryan et al., 2015). This study aims to address this gap by examining the impact of interpersonal trust on online social networks in MOOCs, specifically investigating teacher collaboration and student outcomes in TVET institutions.

Collaboration in education refers to teachers working and learning together to achieve common goals. When teachers collaborate to pursue a shared vision, significant changes to their teaching practices can occur. Collaborative work is considered a powerful tool for professional development (Tallman, 2017). In contemporary educational contexts, professionals not only instruct and interact with students but also collaborate with colleagues on complex problems (Dobber et al., 2014; Moolenaar, 2012; Dufour, 2004).

Collaboration plays a crucial role in the intellectual work of teaching. Throughout the school year, teachers engage in cycles of planning, implementing, and reflecting upon their practices (Hindin et al., 2007). Collaboration is regarded as a key factor in professional development (Gellert, 2008). Today, teachers are both learners and contributors, cooperating to enhance their professional development rather than relying solely on external training methods (Avalos, 2011). Collaboration may occur in various forms, both formal and informal. For instance, regular and special education teachers can work together to address the needs of students with disabilities (Goddard et al., 2007).

Research indicates that educational settings where teachers collaborate on curriculum, syllabus, and teaching methods achieve higher student outcomes. Peers influence instructional practices, impacting student learning (Ostovar-Nameghi et al., 2016). Increased research on teacher collaboration is essential, especially in light of changing educational contexts. While earlier studies focused on individual teacher growth, current research emphasizes communities of practice (Chan & Fai Pang, 2006; Cochran-Smith & Lytle, 1999).

Reviewing educational collaboration, Brownell et al. (1997) found that teachers experienced positive outcomes, such as improved affect and heightened efficacy. Similarly, Shachar and Shmuelevitz (1997) reported that self-efficacy was associated with greater collaboration. When teachers feel more effective, it can lead to improved student achievement (Goddard et al., 2007; Ashton & Webb, 1986; Armor et al., 1976). While researchers acknowledge the link between collaboration and student outcomes, further testing is needed to validate this theory. Quality collaboration is believed to lead to better teaching, even if it remains scarce (Schleifer et al., 2017).

Most existing research on teacher collaboration has focused on the school level. However, there is a gap in understanding the specific mechanisms and processes through which collaboration among TVET teachers leads to improved practices and outcomes. While some studies suggest a positive relationship between collaboration and teacher efficacy, a deeper understanding of effective collaborative strategies in the TVET context is necessary. Further research will provide valuable insights for designing interventions and policies that promote effective collaboration and enhance the quality of TVET education.

## III. METHODOLOGY

This study employs a quantitative research design to investigate the impact of MOOCs and online social networks on teacher collaboration from the perspective of Technical and Vocational Education and Training (TVET) educators. Structural Equation Modeling (SEM) serves as the analytical technique to explore the relationships among these variables and the mediating role of interpersonal trust.

Participants in this study comprise TVET teachers from selected institutions, with a purposive sampling technique applied to ensure representation across diverse backgrounds and experiences. A total of 343 teachers participated, completing questionnaires that were subsequently analyzed, representing a sample from a total population of 3,900 teachers.

Data were collected through a survey questionnaire specifically designed for this research. The questionnaire included items related to MOOC usage, online social network usage, teacher collaboration, and interpersonal trust. Administration of the survey was conducted electronically or in person, based on feasibility and participant convenience.

The survey utilized validated scales tailored to assess the specific variables of interest. Established psychometric instruments quantified MOOC usage through indicators such as Course Design and Content (Almaiah & Alyoussef, 2019; Pilli & Admiraal, 2017), Pedagogical Effectiveness (Jung et al., 2019; Conole, 2015; Gamage et al., 2015), Learner Engagement (Padilla Rodriguez et al., 2020; Deng et al., 2020), Assessment and Feedback (Floratos et al., 2015; Suen, 2014), Instructor Support and Communication (Doo et al., 2020; Gregori et al., 2018; Hew et al., 2014), Professional Development (Misra, 2018; Gonçalves et

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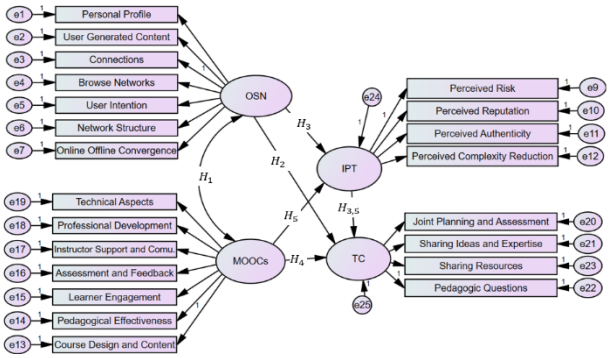
al., 2018; Koukis et al., 2018; Koutsodimou et al., 2015; Karlsson et al., 2014), and Technical Aspects (Mihai et al., 2015). Online social network usage was measured using the scale developed by Berger (2011), while teacher participation was assessed via Brown's (2016) scale. Interpersonal trust was evaluated using an adapted version of the questionnaire by Koidl and Kapanova (2022). Each measure was selected based on rigorous evaluations of reliability, validity, and relevance to enhance the robustness of the findings.

The figure (1), comprehensive research model has been developed based on existing theories and prior empirical studies. The model has depicted the hypothesized relationships between MOOC usage, online social network usage, teacher collaboration, and the mediating role of interpersonal trust. The model has been tested using SEM to evaluate the fit of the data to the proposed theoretical framework.




**Figure( 1): Conceptual Framework**

The conceptual framework explores the relationships among Online Social Networks (OSNs), Interpersonal Trust (IPT), Teacher Collaboration (TC), and Massive Open Online Courses (MOOCs). OSNs enable educators to connect and share resources, impacting trust levels. Interpersonal Trust is essential for enhancing collaboration, allowing teachers to engage in joint planning and resource sharing. MOOCs offer diverse learning opportunities and facilitate connections among educators and learners. Factors like perceived authenticity, reputation, and complexity within OSNs influence trust and collaboration. Overall, the framework highlights the interconnectedness of these elements in promoting effective online educational practices.

## IV. HYPOTHESIS DEVELOPMENT

Online learning has become integral to education, offering convenience for students managing busy schedules. MOOCs have emerged as a modern educational approach, gaining acceptance in universities for their ability to facilitate self-directed learning and professional networking (Bowers & Kumar, 2015; Khan et al., 2020). They enable continuous education, driven by personal interest and the desire to enhance workplace skills (Soleymani et al., 2022).

Online social networks (OSNs) play a vital role in this context, fostering interaction and collaboration among learners, which enhances participatory learning and knowledge sharing. As educational paradigms evolve, MOOCs have redefined access to lifelong learning beyond traditional settings (Sinha, 2014). The 2010-2012 Horizon Reports highlight a shift towards collaborative technology in education, significantly influenced by MOOCs (Ostashewski et al., 2012).

Given this landscape, this study posits the following hypothesis:

**H1:** *There is a significant relationship between online social networks and MOOCs, whereby online social networks enhance collaborative learning and knowledge sharing within MOOCs.*

This hypothesis suggests that OSNs improve communication and collaboration among learners, leading to enhanced educational outcomes.

Teacher collaboration, facilitated by online networks, is crucial for professional development and improving instructional practices (Fullan & Hargreaves, 2012). OSNs expand learning opportunities beyond the classroom, allowing teachers to collaborate effectively during their professional training (García-Martínez et al., 2022). Therefore, this study assumes that:

***H2****: Online social networks have a significant impact on teacher collaboration in education.*

This hypothesis emphasizes OSNs' role in fostering a collaborative culture among educators, which is essential for enhancing teaching quality.

OSNs also enhance interpersonal trust among educators, which is crucial for effective collaboration. Trust encourages open communication and resource sharing, leading to improved classroom practices (Carminati et al., 2022; Kwon et al., 2021). Given this context, we hypothesize:

***H3****: An online social network has a significant relationship with the mediating role of interpersonal trust in fostering collaboration among teachers*.

This hypothesis indicates that the impact of OSNs on teacher participation is strengthened by the level of trust among educators.

In the realm of professional development, MOOCs provide personalized education, yet they face challenges such as high dropout rates (Chen et al., 2020). Teacher influence significantly affects learners' continuous engagement, mediated by perceived usefulness and satisfaction (Liu & Huang, 2023). To address these challenges, the integration of social networks is critical. Thus, this study assumes that:

***H4a****: There is a significant positive impact of online social networks through MOOCs on teachers' collaboration in educational activities.*

***H4b****: Interpersonal trust positively mediates the relationship between online social networks through MOOCs and teachers' participation in educational activities*.

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These hypotheses suggest that OSNs enhance engagement among educators and underscore the importance of trust in fostering collaborative learning environments. By leveraging social networks within e-learning frameworks, institutions can improve teacher engagement and retention in MOOCs, promoting professional development and better educational outcomes.

## V. DATA ANALYSIS AND RESULTS

**The Demographical Descriptive statistic:** This analysis of demographic variables—age, gender, education level, and organizational affiliation—provides valuable insights into the characteristics of the surveyed population, potentially guiding targeted strategies for social media engagement and educational initiatives.

**Age Distribution**: The age distribution indicates that the 31-40 years group is the most represented, with 116 respondents (33.6%), followed closely by the 20-30 years group at 76 (22.0%). Engagement decreases with age, as the 41-50 years group has 92 respondents (26.7%), while 51-60 years includes 52 (15.1%). The over 60 years category is the least represented, with only 9 respondents (2.6%).

**Gender Distribution**: In terms of gender, there is a notable imbalance, with 64.1% (221 individuals) identifying as male and 35.9% (124 individuals) as female. This suggests a predominantly male demographic, which may affect preferences and engagement behaviors.

**Table ( 1): Demographic Distribution by Age, Gender, Education, and Organization**

| | | | |
|---|---|---|---|
| Age | 20-30 | Frequency | 76 |
| | | Percent | 22.0% |
| | 31-40 | Frequency | 116 |
| | | Percent | 33.6% |
| | 41-50 | Frequency | 92 |
| | | Percent | 26.7% |
| | 51-60 | Frequency | 52 |
| | | Percent | 15.1% |
| | More than 60 | Frequency | 9 |
| | | Percent | 2.6% |
| Gender | Male | Frequency | 221 |
| | | Percent | 64.1% |
| | Female | Frequency | 124 |
| | | Percent | 35.9% |
| Education | Vocational Graduate | Frequency | 5 |
| | | Percent | 1.4% |
| | Bachelor | Frequency | 80 |
| | | Percent | 23.2% |
| | Master | Frequency | 144 |
| | | Percent | 41.7% |
| | Ph.D. | Frequency | 85 |
| | | Percent | 24.6% |
| | ….. | Frequency | 31 |
| | | Percent | 9.0% |
| Org | School | Frequency | 132 |
| | | Percent | 38.3% |
| | Institute | Frequency | 204 |
| | | Percent | 59.1% |
| | …... | Frequency | 9 |
| | | Percent | 2.6% |

**Education Level:** Regarding education, the largest group consists of Bachelor's degree holders (144 individuals, 41.7%), followed by Master's degree holders (80 individuals, 23.2%). Vocational Graduates constitute 24.6% (85 individuals), while only 5 (1.4%) have a Ph.D. This indicates a strong representation of higher educational attainment among respondents.

**Organizational Affiliation:** The organizational affiliation data shows that a majority of respondents are from Institutes (204 individuals, 59.1%), followed by Schools (132 individuals, 38.3%). A small group (9 individuals, 2.6%) falls under Others. This suggests a strong focus on educational environments among the respondents, influencing their engagement and interactions.

**Usage Frequency of Social Media Platforms:** The data shows that 63.5% of respondents use social media platforms several times a day (219 individuals). A significant number also engage once a day (19.4%, 67 individuals). Less frequent usage is noted, with 4.3% using them once a week (15 individuals), 11.0% once a month (38 individuals), and a minimal 1.7% using them less than once a month (6 individuals). This indicates a strong tendency toward frequent engagement among the majority.

**Table ( 2): Analysis of Social Media Usage Patterns and User Engagement Levels**

| | | | |
|---|---|---|---|
| How often do you usually use social media platforms? | Several times a day | Frequency | 219 |
| | | Percent | 63.5% |
| | Once a day | Frequency | 67 |
| | | Percent | 19.4% |
| | Once a week | Frequency | 15 |
| | | Percent | 4.3% |
| | Once a month | Frequency | 38 |
| | | Percent | 11.0% |
| | Less than once a month | Frequency | 6 |
| | | Percent | 1.7% |
| Which social media platforms do you usually use? | WhatsApp | Frequency | 180 |
| | | Percent | 52.2% |
| | Telegram | Frequency | 107 |
| | | Percent | 31.0% |
| | Instagram | Frequency | 4 |

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| | | | |
|---|---|---|---|
| | LinkedIn | Percent | 1.2% |
| | | Frequency | 43 |
| | | Percent | 12.5% |
| | Others | Frequency | 11 |
| | | Percent | 3.2% |
| What level of social media user and online course participant do you consider yourself to be? | Low Level | Frequency | 83 |
| | | Percent | 24.1% |
| | Medium Level | Frequency | 154 |
| | | Percent | 44.6% |
| | High Level | Frequency | 108 |
| | | Percent | 31.3% |
| How many years have you been using one of the types of online social media platforms? | Less than one year | Frequency | 52 |
| | | Percent | 15.1% |
| | One to three years | Frequency | 76 |
| | | Percent | 22.0% |
| | More than three years | Frequency | 217 |
| | | Percent | 62.9% |

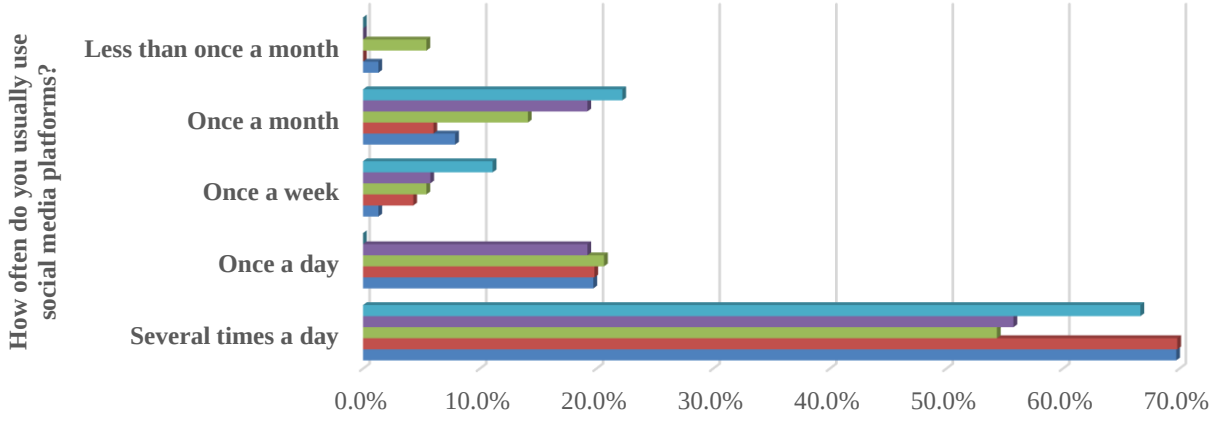
**Preferred Social Media Platforms:** When asked about preferred platforms, WhatsApp is the most popular, with 52.2% (180 individuals) of respondents indicating its use. Telegram follows at 31.0% (107 individuals). Other platforms, such as LinkedIn (12.5%, 43 individuals) and Instagram (1.2%, 4 individuals), show much lower engagement. The Others category accounts for 3.2% (11 individuals), suggesting that while WhatsApp and Telegram dominate, there are still niche uses for other platforms.

**Self-Assessment of User Level**: In terms of self-assessment, 44.6% of respondents consider themselves medium-level users (154 individuals), while 31.3% identify as high-level users (108 individuals). A smaller portion, 24.1% (83 individuals), rates themselves as low-level users. This distribution indicates that most respondents feel reasonably proficient with social media, with a notable number aspiring to advanced usage.

**Years of Experience with social media**: The experience level of respondents shows that a substantial majority, 62.9% (217 individuals), have been using social media for more than three years. 22.0% (76 individuals) report using it for one to three years, while 15.1% (52 individuals) have been users for less than a year. This suggests a well-established user base who are likely familiar with the dynamics of various social media platforms.

**Analysis of Social Media Usage Frequency by Age Group:** The crosstabulation reveals distinct patterns in social media usage across age groups.

In the 20-30 years group, 53 individuals (69.7%) use social media several times a day. The 31-40 years group shows a similar trend with 81 individuals (69.8%) engaging at this frequency. However, the 41-50 years group sees a drop, with 50 individuals (54.3%) using it several times a day, while the 51-60 years group reports 29 individuals (55.8%). The over 61 years category has the lowest engagement, with only 6 individuals (66.7%) using it several times a day.




| | How often do you usually use social media platforms? | | | | |
|---|---|---|---|---|---|
| | Several times a day | Once a day | Once a week | Once a month | Less than once a month |
| Age More than 61 | 66.7% | 0.0% | 11.1% | 22.2% | 0.0% |
| Age Between 51-60 | 55.8% | 19.2% | 5.8% | 19.2% | 0.0% |
| Age Between 41-50 | 54.3% | 20.7% | 5.4% | 14.1% | 5.4% |
| Age Between 31-40 | 69.8% | 19.8% | 4.3% | 6.0% | 0.0% |
| Age Between 20-30 | 69.7% | 19.7% | 1.3% | 7.9% | 1.3% |

**Figure (2): Analysis of Social Media Usage Frequency by Age Group**

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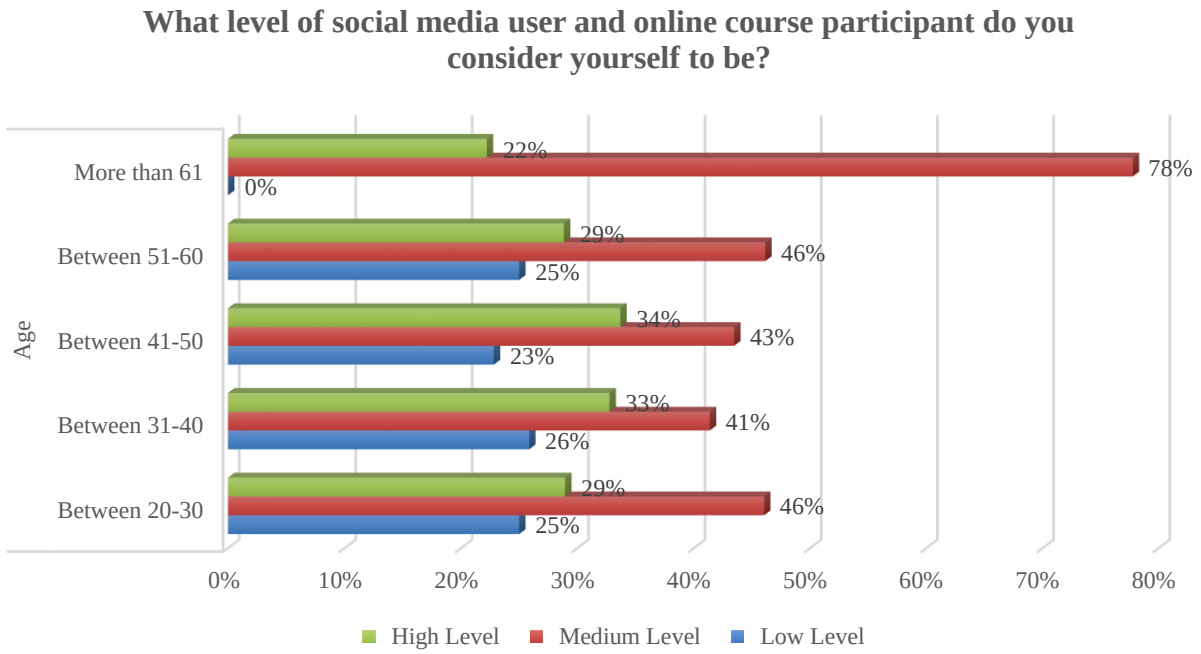
Overall, younger age groups are more active on social media, while usage frequency declines with age, suggesting that engagement strategies should focus on younger demographics.

The crosstabulation analysis highlights age-related perceptions of social media usage and online course participation. In the 20-30 years group, a significant 46.1% identify as medium-level users, reflecting a blend of familiarity and confidence. This trend continues in the 31-40 years group (41.4%), indicating active engagement for personal and educational purposes. The 41-50 years cohort shows a slight decline in high-level users (33.7%), suggesting changing priorities with age. The 51-60 years group maintains a strong medium-level presence (46.2%), while the over 61 years segment has no low-level users, with 77.8% identifying as medium level, indicating increased digital acceptance.




**Figure( 3): Analysis of Social Media Usage level by Age Group**

Overall, this underscores the need for tailored strategies to enhance the engagement and skills of medium-level users across age groups.

The crosstabulation analysis reveals distinct patterns in social media usage and self-assessment among different organizations. In terms of frequency, schools have 83 users (62.9%) engaging several times a day, while institutes show even higher engagement with 129 users (63.2%). Schools total 132 respondents, with lower numbers using social media less frequently, particularly once a month (16) and less than once a month (2). In contrast, institutes have 204 respondents, reflecting a similar decline in less frequent usage.

**Table ( 3): Frequency of Social Media Usage Across Organizations: A Crosstabulation Analysis**

| | | How often do you usually use social media platforms? | | | | | Total |
|---|---|---|---|---|---|---|---|
| | | Several times a day | Once a day | Once a week | Once a month | Less than once a month | |
| Org | School | 83 | 24 | 7 | 16 | 2 | 132 |
| | Institute | 129 | 43 | 8 | 20 | 4 | 204 |
| | ..... | 7 | 0 | 0 | 2 | 0 | 9 |
| Total | | 219 | 67 | 15 | 38 | 6 | 345 |

Regarding user levels, schools report 40 individuals (30.3%) as low level, 62 (46.9%) as medium level, and 30 (22.7%) as high-level users. Conversely, institutes show 43 low-level users (21.1%), 87 medium-level users (42.6%), and 74 high-level users (36.3%). This indicates that while both organizations have a significant number of medium-level users, institutes have a higher proportion of high-level users compared to schools.

**Integrated Journal for Research in Arts and Humanities**
ISSN (Online): 2583-1712
Volume-4 Issue-5 || September 2024 || PP. 162-179 https://doi.org/10.55544/ijrah.4.5.25

**Table (4): Self-Assessment of Social Media Usage and Online Course Participation Levels by Organization: A Crosstabulation Analysis)**

| | | What level of social media user and online course participant do you consider yourself to be? | | | Total |
|---|---|---|---|---|---|
| | | Low Level | Medium Level | High Level | |
| Org | School | 40 | 62 | 30 | 132 |
| | Institute | 43 | 87 | 74 | 204 |
| | ..... | 0 | 5 | 4 | 9 |
| Total | | 83 | 154 | 108 | 345 |

Overall, both schools and institutes demonstrate strong engagement with social media, particularly among medium-level users. However, the presence of more high-level users in institutes suggests a greater degree of proficiency and engagement in online platforms compared to schools.

***Data reliability analysis***

**KMO and Bartlett's Test**

Table (5) shows the results of KMO and Bartlett's Test of Sphericity, which were employed to verify the validity of the measurements. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.833, indicating a good level of adequacy for factor analysis. Generally, a KMO value greater than 0.5 is considered acceptable, with values closer to 1 suggesting that the variables are highly suitable for factor analysis.

**Table (5): KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .833 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 2028.501 |
| | df | 6 |
| | Sig. | .000 |

Bartlett's Test of Sphericity yielded an approximate chi-square of 2028.501 with 6 degrees of freedom and a significance level (p-value) of 0.000. This significant result indicates that there is at least one significant correlation among the variables in the dataset, confirming that the items are related and suitable for further analysis. Based on the results of the KMO and Bartlett's test, the KMO value of 0.833 suggests that the sample size is adequate for factor analysis. The significant result of Bartlett's test further supports the appropriateness of conducting factor analysis, indicating evidence for the presence of underlying factors among the analyzed variables.

The Cronbach's alpha coefficients, as presented in Table (6), indicate high levels of internal consistency and reliability for the variables in the analysis. The values for each variable are as follows: Online Social Network (OSN) has a Cronbach's alpha of 0.955, Massive Open Online Courses (MOOCs) is at 0.988, Interpersonal Trust (IT) stands at 0.985, and Teacher Collaboration (TC) is at 0.984. These values exceed the commonly accepted threshold of 0.70, demonstrating strong internal consistency among the measures.

**Table ( 6): Reliability Analyses**

| Variables | Cronbach Alpha |
|---|---|
| Online Social Network (OSN) | 0.955 |
| Massive Open Online Courses (MOOCs) | 0.988 |
| Interpersonal Trust (IT) | 0.985 |
| Teacher Collaboration (TC) | 0.984 |

Overall, the high Cronbach's alpha values suggest that the variables serve as reliable measures for their respective constructs.

**Goodness of Fit (Model Fit)**

The following table (7), presents a summary of the various model fit indices and theirthreshold values to indicate good model fit.

**Table ( 7): Model Fit Statistics for the Measurement Model**

| Measure of Fit | Value |
|---|---|
| CMIN ($\chi^2$/df) | 3.765 |
| RMSEA | 0.090 |
| NFI | 0.948 |
| CFI | 0.961 |
| GFI | 0.826 |
| RFI | 0.941 |
| IFI | 0.956 |
| TLI | 0.948 |
| RMR | 0.044 |

The measures of fit for the model in this study indicate a reasonable or satisfactory fit. The CMIN value of 3.765 suggests a moderate fit, as values between 2 and 5 are generally acceptable. The RMSEA of 0.090 is slightly above the preferred threshold of 0.08, indicating a need for improvement but still within a reasonable range.

The NFI value of 0.948 and the CFI value of 0.961 indicate a very good fit, as both indices exceed the commonly accepted threshold of 0.90. The GFI of 0.826

**Integrated Journal for Research in Arts and Humanities**
ISSN (Online): 2583-1712
Volume-4 Issue-5 || September 2024 || PP. 162-179 https://doi.org/10.55544/ijrah.4.5.25

is close to the threshold, suggesting that the model fits the data fairly well, although it does not meet the ideal standard of 0.90.

The RFI of 0.941 and the IFI of 0.956 also reflect a strong fit, reinforcing the conclusion that the hypothesized model describes the data adequately. Finally, the RMR value of 0.044 is below the threshold of 0.05, further supporting the model's adequacy.

In summary, the hypothesized model demonstrates a reasonable fit with the collected data, although slight modifications may enhance its performance.

## VI. CORRELATION ANALYSIS

The correlation table (8), presents the Pearson correlation coefficients between various variables: Online Social Network (OSN), Massive Open Online Courses (MOOCs), Interpersonal Trust (IT), and Teacher Collaboration (TC).

The analysis reveals several significant relationships among the variables. OSN and MOOCs show a strong positive correlation ($r = 0.885$, $p < 0.01$), indicating that higher engagement in online social networks is associated with increased participation in MOOCs. Conversely, IT exhibits a strong negative correlation with both OSN ($r = -0.918$, $p < 0.01$) and MOOCs ($r = -0.920$, $p < 0.01$), suggesting that higher levels of interpersonal trust are linked to lower engagement in online social activities and MOOCs.

Furthermore, TC correlates positively with both OSN ($r = 0.913$, $p < 0.01$) and MOOCs ($r = 0.911$, $p < 0.01$), indicating that increased teacher collaboration is associated with higher participation in online social networking and MOOCs. Additionally, TC shows a significant negative correlation with IT ($r = -0.888$, $p < 0.01$), reinforcing the idea that greater collaboration is linked to lower levels of interpersonal trust.

**Table ( 8): Correlations between variables**

| | | OSN | MOOCs | IT | Tc |
|---|---|---|---|---|---|
| OSN | Pearson Correlation | 1 | | | |
| | Sig. (2-tailed) | | | | |
| | N | 345 | | | |
| MOOCs | Pearson Correlation | .885** | 1 | | |
| | Sig. (2-tailed) | .000 | | | |
| | N | 345 | 345 | | |
| IT | Pearson Correlation | -.918** | -.920** | 1 | |
| | Sig. (2-tailed) | .000 | .000 | | |
| | N | 345 | 345 | 345 | |
| Tc | Pearson Correlation | .913** | .911** | -.888** | 1 |
| | Sig. (2-tailed) | .000 | .000 | .000 | |
| | N | 345 | 345 | 345 | 345 |

**. Correlation is significant at the 0.01 level (2-tailed).

Overall, the table (8), indicates significant correlations among the variables, highlighting the complex interrelationships in the context of online learning environments and social dynamics.

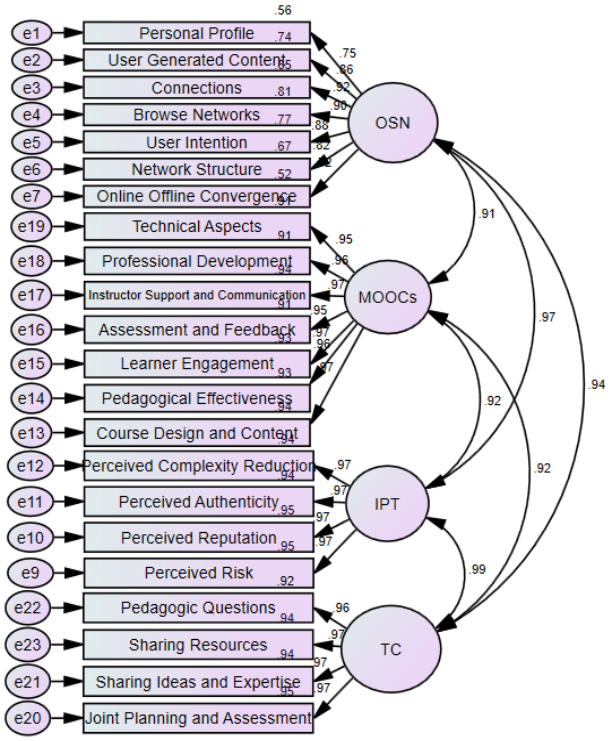



**Figure (4): Correlation Analysis**

The figure (4), illustrates the interrelationships among constructs related to Online Social Networks (OSN), Massive Open Online Courses (MOOCs), Interpersonal Trust (IPT), and Teacher Collaboration (TC), emphasizing the positive correlations among these elements.

The OSN construct shows a strong positive correlation with MOOCs, suggesting that as individuals engage more in online social networks, their participation in MOOCs also increases. This relationship indicates that a robust online social presence can enhance connectivity and support for learners, facilitating a more enriching educational experience.

Similarly, MOOCs are positively correlated with IPT, highlighting that increased engagement in online courses may foster higher levels of interpersonal trust among participants. As learners interact more within these educational frameworks, they may develop trust in their peers and instructors, enhancing collaboration and communication.

**Integrated Journal for Research in Arts and Humanities**
ISSN (Online): 2583-1712
Volume-4 Issue-5 || September 2024 || PP. 162-179 https://doi.org/10.55544/ijrah.4.5.25

Furthermore, TC demonstrates a positive relationship with both OSN and MOOCs. This suggests that collaborative practices among educators are strengthened by active participation in online social networks and MOOCs. As teachers engage in these platforms, they can share resources, ideas, and expertise, leading to improved collaboration and a more supportive educational environment.

Overall, the analysis underscores significant positive correlations among the constructs, indicating that greater engagement in online learning and social networks can enhance interpersonal trust and collaboration among educators and learners. This emphasizes the potential for online environments to create supportive communities that foster trust and facilitate effective collaboration in educational settings.

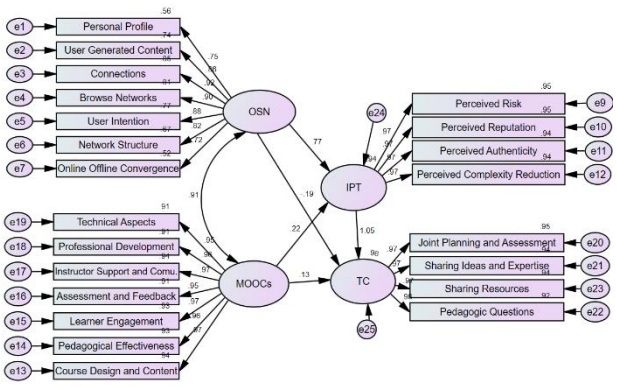
***Structural Equation Modelling (SEM)***

The proposed model is graphically represented using SPSS AMOS version 24.0.0 to perform structural equation modeling (SEM) for data analysis. The maximum likelihood estimation method is employed to estimate the model parameters. The aim of the SEM analysis is to test the hypotheses and determine whether the proposed model fits the data. The SEM analysis focuses on validating the causal structure of the model.

***Final Model***

The following model in this study shows that Online Social Networks (OSN) positively influence Interpersonal Trust (IPT), which in turn affects Teacher Collaboration (TC). Additionally, MOOCs contribute to both IPT and TC.

The following model presents standardized estimates.



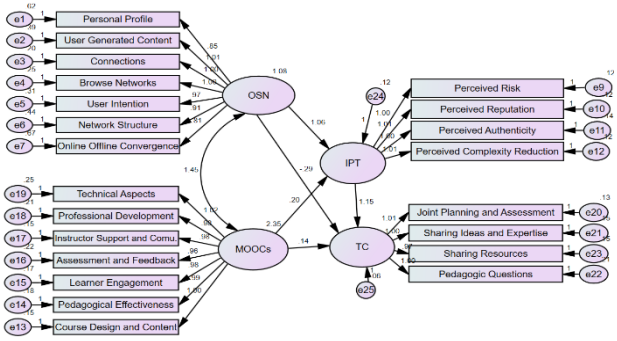

**Figure( 4): Standardized Estimates for the Final Model**

The analysis of the above structural equation model highlights the relationships among constructs influencing Online Social Networks (OSN) and Interpersonal Trust (IPT). The coefficient for Online Social Network (OSN) impacting Interpersonal Trust (IPT) is 0.767, indicating a strong positive relationship; as engagement in online social networks increases, interpersonal trust significantly improves. In contrast, MOOCs has a positive influence on IPT with a coefficient of 0.218, suggesting that participation in MOOCs contributes to building interpersonal trust, though to a lesser extent than OSN.

When examining the impact on Teacher Collaboration (TC), IPT demonstrates a substantial positive effect with a coefficient of 1.047. This indicates that greater interpersonal trust leads to stronger collaboration among teachers. Additionally, MOOCs positively influences Teacher Collaboration with a coefficient of 0.135, highlighting their role in fostering collaborative relationships among educators. However, Online Social Network (OSN) presents a negative coefficient of -0.191 in relation to Teacher Collaboration, suggesting that while OSN fosters interpersonal trust, it may not effectively promote strong collaboration, possibly due to the nature of online interactions.

In summary, the model illustrates that Online Social Networks are pivotal in enhancing interpersonal trust, while MOOCs also provide a positive contribution. Nonetheless, the negative relationship between OSN and Teacher Collaboration indicates challenges in translating online engagement into meaningful collaborative efforts. The strong positive influence of IPT on Teacher Collaboration underscores the importance of fostering interpersonal trust among educators to build robust collaborative networks.

The following model presents unstandardized estimates:




**Figure( 5): Unstandardized Estimates for the Final Model**

The analysis of the structural equation model reveals significant relationships among Online Social Networks (OSN), MOOCs (M), Interpersonal Trust (IPT), and Teacher Collaboration (TC). The coefficient for Online Social Networks (OSN) influencing Interpersonal Trust (IPT) is 1.061, with a standard error (S.E.) of 0.076 and a critical ratio (C.R.) of 13.968, indicating a strong positive relationship that is statistically significant ($p < 0.001$). This suggests that higher engagement in online social networks greatly enhances interpersonal trust among teachers.

MOOCs (M) also positively influence Interpersonal Trust (IPT) with a coefficient of 0.204, an

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S.E. of 0.048, and a C.R. of 4.272 ($p < 0.001$). This indicates that participation in MOOCs contributes to building interpersonal trust, albeit to a lesser extent than Online Social Networks.

When examining the impact on Teacher Collaboration (TC), the effect of Interpersonal Trust (IPT) is substantial, with a coefficient of 1.155, an S.E. of 0.085, and a C.R. of 13.632 ($p < 0.001$). This finding demonstrates that higher levels of interpersonal trust significantly enhance collaboration among teachers. Additionally, MOOCs (M) have a positive effect on Teacher Collaboration (TC), with a coefficient of 0.139, an S.E. of 0.038, and a C.R. of 3.672 ($p < 0.001$), highlighting that MOOCs foster collaborative practices among educators.

Interestingly, Online Social Networks (OSN) show a negative relationship with Teacher Collaboration (TC), with a coefficient of -0.292, an S.E. of 0.116, and a C.R. of -2.524 ($p = 0.012$). This suggests that while online social networks promote interpersonal trust, they may not effectively enhance teacher collaboration and could potentially hinder it.

In summary, the model indicates that Online Social Networks significantly enhance Interpersonal Trust, which in turn positively influences Teacher Collaboration. MOOCs also contribute positively to both IPT and TC. However, the negative relationship between Online Social Networks and Teacher Collaboration highlights potential challenges in translating online engagement into effective collaboration among teachers.

**Table (9): Hypothesis Testing Results for the Relationship between Social Support, Job Satisfaction, and Career Development**

| | **Hypothesis** | **Estimate** | **S.E.** | **C.R.** | **P** | **Sig. /No Sig.** |
|---|---|---|---|---|---|---|
| Direct Effect | OSN<----> MOOCs | 1.349 | 0.05 | 27.022 | *** | Sig |
| | OSN ----> TC | -0.292 | 0.116 | -2.524 | 0.012 | Sig |
| | **Hypothesis** | **Estimate** | **S.E.** | **C.R.** | **P** | **Sig. /No Sig.** |
| Indirect Effect | OSN ----> IPT ----->TC | 0.3176 | 0.103 | 3.08 | *** | Sig |
| | OSN <----> MOOCs -----> TC | 0.187511 | 0.0727 | 2.57 | 0.0102 | Sig |
| | OSN <----> MOOCs ----->IPT---> TC | 0.3176 | 0.0201 | 15.77 | *** | Sig |

The results of this study indicate significant implications for TVET (Technical and Vocational Education and Training) teachers regarding the interplay of online social networks (OSN), MOOCs, interpersonal trust (IPT), and collaboration.

First, the substantial positive relationship between OSN and MOOCs (Estimate = 1.349, $p < 0.001$) highlights how online social networks can enhance collaborative learning and knowledge sharing among TVET teachers. This is particularly important in TVET settings, where practical skills and real-world applications are crucial. By leveraging OSN, TVET teachers can connect with peers, share resources, and collaborate on innovative teaching strategies, enriching the learning experience for students.

However, the analysis also revealed a significant negative direct effect of OSN on teacher collaboration (Estimate = -0.292, $p = 0.012$). This suggests that while online social networks have the potential to enhance collaboration among TVET teachers, there may be underlying challenges affecting this relationship. Factors such as traditional teaching practices, resistance to change, or insufficient training in digital tools could hinder effective collaboration. Understanding these barriers is essential for developing strategies that promote the effective integration of OSN in TVET.

Importantly, the role of interpersonal trust emerged as a vital mediator in the relationship between OSN and collaboration among TVET teachers. The significant indirect effect (Estimate = 0.3176, C.R. = 3.08, $p < 0.001$) indicates that fostering interpersonal trust is critical for enhancing collaborative efforts. In the context of TVET, where teamwork and cooperative learning are essential, building trust among teachers can lead to more effective sharing of knowledge and resources, ultimately benefiting students.

Furthermore, the positive impact of OSN through MOOCs on teacher collaboration (Estimate = 0.1875, C.R. = 2.57, $p = 0.0102$) reinforces the idea that online social networks can facilitate collaboration among TVET instructors. MOOCs provide an excellent platform for educators to engage with one another, exchange best practices, and develop new pedagogical approaches tailored to vocational training. This collaboration is crucial for adapting teaching methods to meet the evolving demands of the job market.

Additionally, the significant mediating role of interpersonal trust (Estimate = 0.3176, C.R. = 15.77, $p < 0.001$) underscores the importance of trust in enhancing the effectiveness of OSNs in promoting collaboration among TVET teachers. When trust is established, teachers are more likely to share their expertise, seek advice, and collaborate on projects, fostering a

supportive professional community that enhances the quality of vocational education.

## VII. CONCLUSION

In summary, this analysis highlights the critical role that online social networks (OSN) play in enhancing collaboration among Technical and Vocational Education and Training (TVET) teachers. The significant positive relationship between OSN and MOOCs underscores the potential of digital platforms to foster collaborative learning environments where educators can share resources and innovative teaching strategies. However, the negative direct effect of OSN on teacher collaboration reveals underlying challenges that may impede effective engagement among educators. Understanding these barriers is essential for developing strategies that promote more effective use of online networks.

Importantly, the findings reveal that interpersonal trust serves as a vital mediator in the relationship between OSN and teacher collaboration. The significant indirect effects, particularly through the pathways of IPT and MOOCs, illustrate that cultivating trust among TVET teachers is crucial for enhancing collaborative efforts. This trust not only facilitates knowledge sharing but also strengthens professional relationships, which are essential in a field that relies heavily on teamwork and cooperation.

To maximize the benefits of OSNs, educational institutions must prioritize their integration into TVET frameworks while simultaneously fostering a culture of trust among educators. By doing so, they can create an environment that encourages collaboration, leading to improved educational outcomes and more effective vocational training. Future research should explore the nuances of these relationships further, particularly addressing the barriers to direct collaboration and identifying best practices for leveraging online social networks in TVET contexts. Ultimately, embracing the potential of OSNs and MOOCs, coupled with a strong emphasis on interpersonal trust, can transform the landscape of collaboration among TVET teachers, enriching the educational experience for both educators and students alike.

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