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# Networking & digital communication through social media on promotion of fisheries professionalism Among fisheries professional

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**Abstract**

The digitalization of the agricultural and fisheries sectors has reshaped academic learning, professional networking, and career development. In Gujarat, a leading marine fisheries state in India, effective use of digital communication tools is vital for developing future fisheries professionals. This study assessed social media usage patterns and their role in promoting fisheries professionalism among fisheries students across Gujarat and other major fisheries hubs in India. A descriptive cross-sectional survey was conducted using an online questionnaire, collecting responses from 171 students representing over 35 institutions across 17 states. Most respondents were B.F.Sc. students (81.3%), with 43.3% in their final year. Results showed very high digital engagement, with 98.8% using social media daily and 36.3% spending about four hours per day online. WhatsApp and Telegram were the primary platforms for academic coordination, with 90.1% identifying Telegram as a key knowledge-sharing tool. However, a professionalism gap was evident, as extensive use of Instagram contrasted with limited LinkedIn engagement. The study concludes that while fisheries students are digitally active, structured professional identity development remains limited, highlighting the need to integrate science communication and professional digital skills into fisheries education.

**Keywords:** Fisheries professionalism, social media, digital communication, science communication

## 1. Introduction

The fisheries sector represents a vital pillar of India's economy and has been designated as a "sunrise sector" within the national Blue Economy initiative. As the sector increasingly adopts data-intensive, technology-driven, and sustainability-oriented approaches, the demand for enhanced professionalism across all levels of stakeholders has grown substantially.

In the contemporary fisheries landscape, professionalism extends beyond conventional technical and field-based competencies to include digital skills, timely information sharing, and participation in global professional networks. Advances in Information and Communication Technology (ICT) have significantly transformed both educational practices and professional engagement. Social media platforms, previously regarded primarily as recreational spaces, have evolved into dynamic environments that facilitate professional interaction, knowledge dissemination, and the development of Communities of Practice.

For emerging fisheries professionals—particularly students enrolled in fisheries institutions across Gujarat—digital platforms provide significant opportunities for academic enrichment and career advancement. Platforms such as YouTube support visual and experiential learning, LinkedIn enables professional networking, and ResearchGate facilitates scholarly collaboration and research visibility. These digital tools help connect localized academic training with international scientific and industry benchmarks. Nevertheless, systematic research examining how fisheries students employ these platforms to strengthen their professional competencies remains limited.

Against this backdrop, the present study investigates the status of networking and digital communication practices among fisheries students in India. Through a survey conducted across multiple fisheries colleges in Gujarat, the study aims to identify the most influential digital platforms for fostering fisheries professionalism and to explore ways in which digital communication tools can be effectively integrated into formal fisheries education. The findings are expected to contribute to the development of a more skilled, connected, and technologically adept fisheries workforce.

## 2. Materials and Methods

### 2.1 Research Design

A descriptive, cross-sectional research design was adopted for this study. This approach was selected to provide a

snapshot of the current levels of digital literacy and social media engagement among the fisheries student community in Gujarat.

### 2.2 Study Area and Sampling

The study was conducted across the state of India, targeting students enrolled in professional fisheries degree programs.

**Target Population:** Undergraduate and postgraduate students from major institutions.

**Sampling Technique**: A purposive sampling method was utilized to ensure the respondents were actively involved in fisheries education and therefore relevant to the study's focus on "fisheries professionalism."

**Sample Size:** A total of 171 respondents participated in the survey.

### 2.3 Data Collection Tool (Instrumentation)

For the purpose of this study, a structured questionnaire was employed as the primary data collection tool to gather information from the respondents. The questionnaire was designed to obtain both demographic information, such as college name, stream, and semester, as well as insights into social media usage, preferences, and behavior among fisheries students. It comprised 20 questions covering various aspects of digital engagement, including daily usage patterns, preferred platforms, participation in webinars, and awareness of fisheries-related social media channels. The complete questionnaire is provided in the Annexure - 1. This instrument facilitated systematic collection of quantitative and qualitative data, allowing for an organized analysis of the role of social media in promoting fisheries professionalism.

### 2.4 Data Collection Procedure

The survey was administered online to ensure a wide geographical reach across india. The Google Form link was distributed through professional WhatsApp groups, email lists, and student networks. Participation was voluntary, and anonymity was maintained to ensure the integrity of the responses.

### 2.5 Statistical Analysis

The raw data gathered from Google Forms was exported to Microsoft Excel for systematic cleaning and processing. Descriptive statistics, specifically frequency and percentage analysis, were employed to interpret the data. The results were then visualized using tables and charts to illustrate the trends in digital communication and its role in promoting professionalism.

## 3. Results and Discussion

The data collected from fisheries students across India indicate a high level of digital integration in both their academic activities and professional engagement. The key findings derived from the survey are presented and discussed in the following sections.

### 3.1 Participants

A total of 171 valid responses were collected from fisheries students affiliated with different universities across Gujarat. The findings reflect a substantial integration of digital tools in both academic pursuits and professional interactions among the participants. The principal outcomes of the survey are presented and interpreted in the subsequent sections.

**Table 1:** Institutional Affiliation of Students Participating in the Survey

| State | Institutions |
|---|---|
| Gujarat | • College of Fisheries Science (Veraval & Navsari) Kamdhenu University<br>• Maharaja Krishnakumarsinhji Bhavnagar University - Bhavnagar |
| Telangana | • College of Fishery Science, PVNRTVU, Pebbair<br>• GOVT Degree College(Autonomous), Siddipet |
| Andhra Pradesh | • College of Fishery Science, Muthukur<br>• Sri Venkateswara Veterinary University (SVVU)<br>• Mvkr Fisheries Polytechnic College in Bhavadevarapalli, Krishna. |
| Maharashtra | • College of Fishery Science, Maharashtra Animal & Fishery Sciences University, Udgir<br>• College of Fishery Science, Maharashtra Animal & Fishery Sciences University, Nagpur<br>• College of Fishery Science, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Ratnagiri |
| Chhattisgarh | • College of Fisheries, Kamdhenu Vishwavidyalaya, Chhattisgarh |
| Bihar | • College of Fisheries, Bihar Animal Sciences University (BASU), Kishanganj,<br>• The College of Fisheries, Dr. Rajendra Prasad Central Agricultural University, Dholi, Muzaffarpur |
| Tamil Nadu | • Centre of Advanced Study in Marine Biology, Annamalai University, Chidambaram, Tamil Nadu, India.<br>• Dr. M.G.R. Fisheries College and Research Institute, Ponneri / Thalainayeru, Tamil Nadu Dr. J. Jayalalithaa Fisheries University (TNJFU), Tamil Nadu, India. |
| Karnataka | • College of Fisheries, Mangaluru, Karnataka Veterinary, Animal and Fisheries Sciences University (KVAFSU), Karnataka, India. |
| West Bengal | • Acharya Prafulla Chandra College, University of Calcutta, Kolkata, West Bengal, India.<br>• West Bengal University of Animal and Fishery Sciences (WBUAFS), Kolkata, West Bengal, India.<br>• Asutosh College, University of Calcutta, Kolkata, West Bengal, India<br>• Ramnagar College, Vidyasagar University, West Bengal, India.<br>• Egra Sarada Shashi Bhusan College, Vidyasagar University, West Bengal, India. |
| Odisha | • College of Fisheries, Rangeilunda, Odisha University of Agriculture and Technology (OUAT), Odisha, India. |
| Jharkhand | • College of Fisheries Science, Gumla, Birsa Agricultural University, Jharkhand, India. |
| Uttar Pradesh | • Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, Uttar Pradesh, India<br>• Acharya Narendra Deva University of Agriculture and Technology, Ayodhya, Uttar Pradesh, India. |

| | |
|---|---|
| | • College of Fisheries Science and Research, Etawah, Uttar Pradesh Pandit Deen Dayal Upadhyay Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go-Anusandhan Sansthan (DUVASU), Uttar Pradesh, Indi |
| Tripura | • College of Fisheries, Lembucherra, Central Agricultural University (Imphal), Tripura, India. |
| Uttarakhand | • Govind Ballabh Pant University of Agriculture and Technology, Pantnagar, Uttarakhand, India.<br>• Doon (Post Graduate) College of Agriculture Science and Technology, Dehradun, Uttarakhand, India. |
| Rajasthan | • College of Fisheries, Maharana Pratap University of Agriculture and Technology (MPUAT), Udaipur, Rajasthan, India.<br>• Jaipur National University, Jaipur, Rajasthan, India |
| Kerala | • College of Fisheries, Kerala University of Fisheries and Ocean Studies (KUFOS), Kerala, India. |
| J & K | • Faculty of Fisheries, Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir (SKUAST-K), Jammu & Kashmir, India. |
| National | • ICAR-Central Institute of Fisheries Education (CIFE), Mumbai. |

### 3.2 Academic Profile of Respondents

The academic composition of the 171 respondents reflects strong representation from the professional fisheries student community. A substantial proportion of participants were enrolled in the Bachelor of Fisheries Science (B.F.Sc.) programme, comprising 81.3% (n = 139) of the total sample. Students from general Bachelor of Science (B.Sc.) programmes constituted 7.6% (n = 13). This distribution is consistent with global and regional trends emphasizing Professional Fisheries Education (PFE) as a specialized discipline distinct from broader biological sciences (Kumar, M., 2028) [17].

Higher academic levels were also represented in the study population, with 6.4% (n = 11) of respondents pursuing a Master of Fisheries Science (M.F.Sc.) degree and 3.5% (n = 6) enrolled in Master of Science (M.Sc.) programmes. In addition, a smaller yet meaningful segment of participants included doctoral scholars, MBA students, and diploma holders. Previous research suggests that undergraduate students primarily engage with digital networks for career exploration, whereas postgraduate students utilize these platforms for specialized academic and professional collaboration.

The inclusion of MBA and diploma holders, although limited in number, highlights the increasingly interdisciplinary nature of the fisheries sector, particularly in areas such as fisheries economics and extension services. Overall, this diverse academic profile enables the study to capture digital networking behaviors across multiple educational stages, ranging from entry-level undergraduates to advanced research scholars within the fisheries domain.

**Table 2:** Academic Profile of Respondents participated in survey

| Academic Stream | Frequency (n) | Percentage (%) |
|---|---|---|
| B.F.Sc. (Bachelor of Fisheries Science) | 139 | 81.3% |
| B.Sc. (Bachelor of Science) | 13 | 7.6% |
| M.F.Sc. (Master of Fisheries Science) | 12* | 7.0% |
| M.Sc. (Master of Science) | 7** | 4.1% |
| Others (PhD, MBA, Diploma) | 4 | 2.4% |
| Total | 171 | 100% |

*Includes "M.F.Sc. Completed" entries. **Includes "M.Sc. Aquaculture" entries.

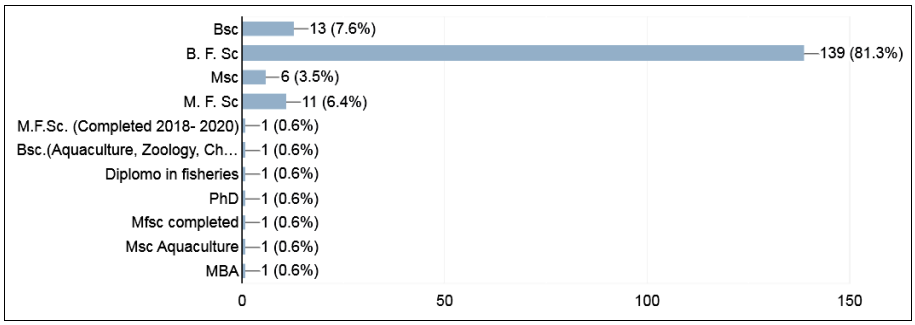


**Fig 1:** graphical representation of Academic Profile of Respondents

### 3.3 Semester-wise Participation

The distribution across semesters (1 to 8) shows a very balanced and healthy participation across all four years of the degree program.

The semester-wise distribution of respondents reveals distinct patterns in digital engagement aligned with students' academic progression. A notable proportion of participants (43.3%) were enrolled in their final year (7th and 8th semesters), a trend supported by research on career preparation behaviors. As students approach graduation, their use of digital platforms increasingly shifts from social interaction toward professional networking tools such as LinkedIn and online job portals. This heightened engagement reflects efforts to address the "employability gap" during the transition from academic life to the labor market. Additionally, the 7th and 8th semesters typically coincide with Student READY or Entrepreneurship Learning Programme (ELP) components, which further encourage professional exposure and digital connectivity.

High participation was also observed among second-

semester students, who accounted for 19.3% of the respondents. This pattern reflects the "digital native" onboarding phase, during which newly admitted students rely extensively on peer-driven digital resources for academic adjustment and information exchange (Henderson, Selwyn, & Aston, 2017) [14]. Previous studies indicate that early-stage university students are particularly active users of organizational digital tools, such as WhatsApp and Telegram groups, to navigate unfamiliar academic environments and share learning materials.

In contrast, comparatively lower participation was recorded among students in the middle phase of the programme, particularly those in the fifth semester (12.9%). Educational psychology literature often describes this period as a "sophomore slump" or "mid-degree plateau," during which students are deeply engaged with core coursework and may exhibit reduced involvement in external activities, including surveys and professional networking initiatives (Schaller, 2018).

Overall, the high representation of final-semester students, especially those in the eighth semester (24.6%), corroborates findings by Benson *et al*. (2014), who reported intensified digital platform use among students nearing graduation to enhance professional visibility. Conversely, the substantial engagement of second-semester students underscores the importance of digital tools in facilitating academic integration during the initial stages of higher education (Henderson *et al*., 2017) [14].

**Table 3:** Semester-wise Participation of respondent participated in survey

| Semester | Percentage (%) | Interpretation |
|---|---|---|
| 8th Semester | 24.6% | Final-year students, likely using apps for job seeking/LinkedIn. |
| 7th Semester | 18.7% | Students focusing on professional internships and ELP. |
| 2nd Semester | 19.3% | Freshmen beginning to use digital tools for notes/Telegram. |
| 5th Semester | 12.9% | Mid-program students focusing on core technical subjects. |
| Others (1,3,4,6) | 24.5% | Mixed representation from other academic levels. |

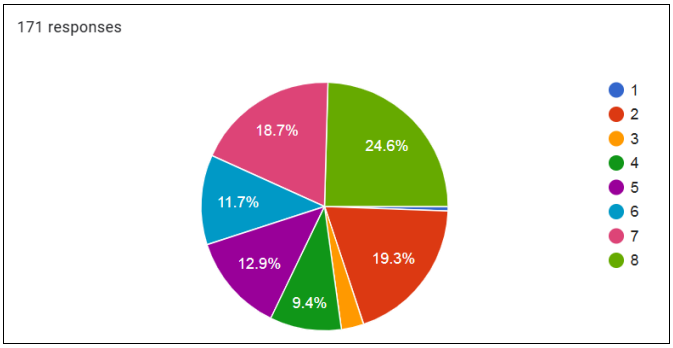


**Fig 2:** graphical representation of Semester-wise Participation of respondent

### 3.4 High Frequency of Social Media Engagement

The survey findings reveal an almost universal dependence on digital platforms among fisheries students. An overwhelming 98.8% of respondents reported daily use of social media, indicating exceptionally high levels of digital engagement within the student community. This pattern is consistent with the observations of Ametepey (2025) [2], who noted that routine digital interaction has become the dominant approach to information acquisition among students in agriculture-related disciplines.

The near-total prevalence of daily social media usage underscores that digital platforms have transitioned from supplementary tools to essential communication infrastructure for emerging fisheries professionals. Social media now functions as a vital extension mechanism, enabling the swift exchange of fisheries-related knowledge, innovations, and best management practices (Biswal *et al*., 2025) [6].

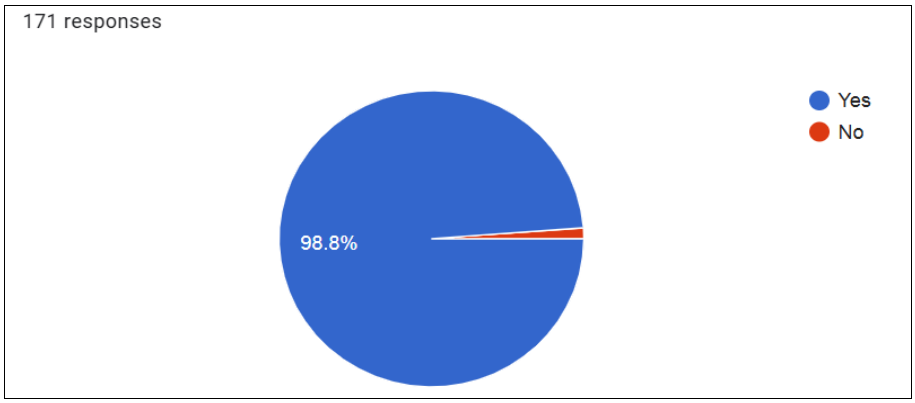


**Fig 3:** graphical representation of Semester-wise Participation of respondent

**Table 4:** Frequency of Social Media Engagement among Fisheries Students (n = 171)

| Response Category | Number of Respondents | Percentage (%) |
|---|---|---|
| Yes | 169 | 98.8 |
| No | 2 | 1.2 |
| Total | 171 | 100.0 |

### 3.5 Analysis of Daily Time Spent on Digital Platforms

The amount of time spent on digital platforms serves as an important indicator of the depth of digital integration among fisheries students. Analysis of responses from 171 participants demonstrates substantial variation in daily social media engagement, reflecting differing patterns of digital immersion.

The largest proportion of respondents (36.3%) reported spending approximately four hours per day on social media platforms. This level of engagement indicates that digital media form a central component of daily routines for a significant segment of students, offering considerable scope for acquiring specialized skills through technical content, instructional videos, and professional learning resources.

Moderate levels of usage were observed among 28.7% of respondents, who reported spending around two hours per day on social media. This group appears to adopt a more balanced pattern of engagement, utilizing digital platforms for academic networking and social interaction without excessive dependence. Supporting this observation, Bhandarkar *et al*. (2021) [4] reported that students with moderate social media usage (1-3 hours per day) often demonstrate enhanced collaborative learning outcomes, whereas extended usage beyond this range may negatively affect academic concentration.

High-intensity engagement was recorded for 21.1% of respondents, including 12.9% who spent approximately six hours per day and 8.2% who exceeded six hours of daily usage. Such extensive engagement suggests active participation in advanced digital learning environments, including specialized academic forums, professional networking groups, and content creation activities. Orth (2025) [19] emphasized that sustained digital engagement is increasingly essential for fisheries students to participate effectively in "Communities of Practice," which involve activities such as digital storytelling, scholarly communication on platforms like X (formerly Twitter), and the development of electronic portfolios—processes that are time-intensive yet valuable for long-term professional growth.

In contrast, the smallest group of respondents (14.0%) reported limited social media use, spending less than two hours per day on digital platforms. Their engagement is likely purposeful and selective, focusing primarily on essential communication or targeted professional updates. Similar patterns have been documented in agriculture-related disciplines, where low-duration users tend to prioritize focused information retrieval through platforms such as Telegram or WhatsApp rather than prolonged content browsing (Ametepey, 2025) [2].

**Table 5:** Analysis of Daily Time Spent on Digital Platforms by participant

| Daily Time Spent | Frequency / Percentage | Professional Context |
|---|---|---|
| Around 4 Hours | 36.3% | High potential for specialized skill acquisition. |
| Around 2 Hours | 28.7% | Balanced social and academic networking. |
| 6+ Hours | 21.1% | Intensive digital engagement and resource seeking. |
| Less than 2 Hours | 14.0% | Targeted or limited digital interaction. |

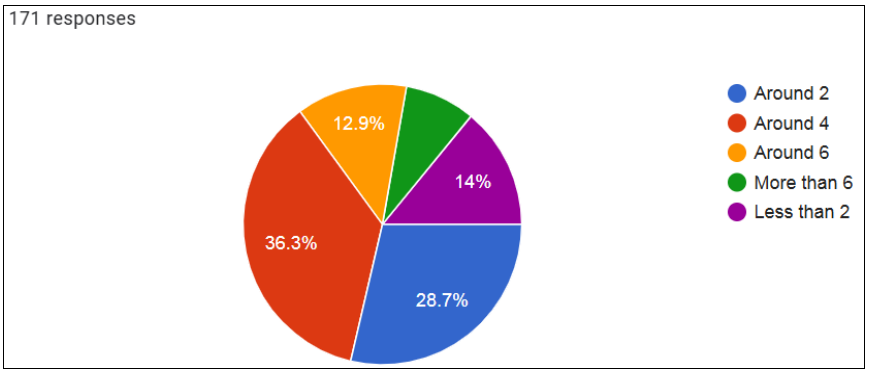


**Fig 4:** graphical representation of Daily Time Spent on Digital Platforms by participant

### 3.6 Preferred Social Media Platforms

The survey reveals a distinct hierarchy in digital platform preferences among fisheries students, with instant messaging and academic resource-sharing applications clearly dominating daily use.

WhatsApp (60.8%) emerged as the most preferred platform by a substantial margin. Its widespread adoption reflects its function as a central "digital workspace" for students, supporting real-time coordination, dissemination of official academic information, and peer-to-peer technical discussions. Previous studies have identified WhatsApp as one of the most effective tools for immediate advisory support and informal knowledge exchange within the fisheries and agricultural sectors. In recent years, particularly during 2024-2025, the platform has been described as deeply embedded in Indian agricultural communities, effectively complementing and, in some cases, compensating for limitations in conventional extension systems (Elfitasari, 2023) [9].

Telegram (29.2%) ranked second in platform preference, largely due to its advanced technical features that support academic and professional use. Its capacity to share large-sized files, distribute research papers, and host extensive subject-specific channels makes it especially valuable for fisheries students engaged in higher learning and competitive examination preparation. This preference aligns with broader trends observed among STEM and agricultural students across South Asia, where Telegram is favored for its ability to accommodate large academic datasets, recorded lectures, and comprehensive question banks for examinations such as the Agricultural Research Service (ARS) and ICAR-JRF.

Facebook (8.8%) continues to maintain relevance for a smaller proportion of students, primarily as a platform for accessing institutional updates and participating in large national and international fisheries-related groups. The

findings indicate that students use Facebook mainly to follow organizations such as FAO and ICAR, and to engage with global thematic groups focused on sustainable fisheries and aquatic resource management. This pattern supports earlier research suggesting that Facebook serves more as an information-monitoring and professional awareness tool rather than a platform for routine peer interaction.

Other platforms, including X (Twitter), LinkedIn, and Snapchat, collectively accounted for less than 2% of primary platform preference. This suggests that although students may maintain a presence on these platforms, they are not perceived as essential for daily academic communication. In particular, LinkedIn and X appear to be viewed primarily as career-entry or professional broadcasting tools rather than platforms for continuous interaction. The low preference for LinkedIn as a daily-use platform reflects a predominantly transactional pattern of engagement, wherein students access the platform selectively during key career transition phases rather than as part of their routine digital ecosystem (HolonIQ, 2025).

**Table 6:** Preferred Social Media Platforms by participant

| Platform | Preference (%) | Professional Role in Fisheries |
|---|---|---|
| WhatsApp | 60.8% | Real-time coordination and technical peer groups. |
| Telegram | 29.2% | Academic resource repository and file sharing. |
| Facebook | 8.8% | Following global institutions and industrial news. |
| Others | 1.2% | Niche networking and personal social interaction. |

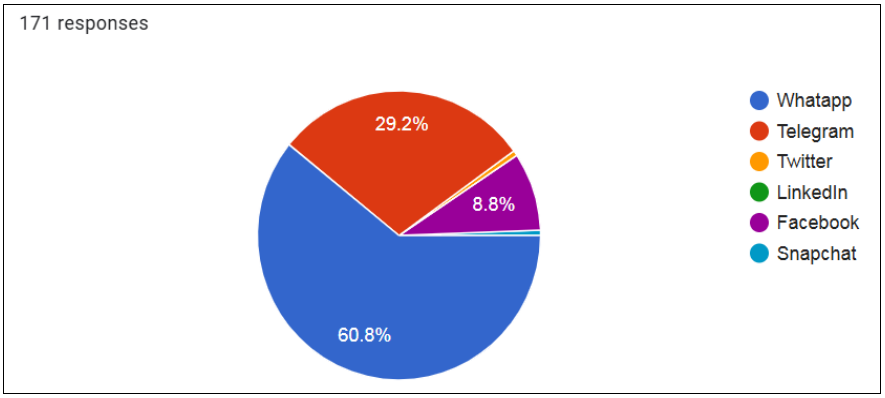


**Fig 5:** graphical representation of Preferred Social Media Platforms by participant

### 3.7 Perceived Utility for Knowledge Sharing

The findings indicate a strongly positive perception among fisheries students regarding the educational value of digital platforms. More than half of the respondents (56.7%) expressed clear agreement that social media is an effective medium for knowledge sharing. This perception aligns with earlier studies suggesting that students recognize the usefulness of social media when it offers learning affordances not typically available in traditional classroom settings, such as immediate exposure to diverse viewpoints and timely updates on advancements in fisheries science and technology (Mao, 2014).

A substantial proportion of participants (42.7%) acknowledged that the educational value of social media is conditional, largely depending on the credibility and expertise of the individuals or organizations being followed. This response highlights growing student awareness of the need to engage selectively with reliable professional sources, domain experts, and scientifically validated content to maximize learning outcomes.

Only a negligible share of respondents (less than 1%) perceived social media as merely a recreational activity or considered it entirely unhelpful for educational purposes. Contemporary academic discourse increasingly conceptualizes social media as a Personal Learning Network (PLN) rather than a source of distraction. The extremely low level of skepticism observed in this study suggests a clear shift from the traditional "distraction narrative" toward a "utility-driven narrative" among professional fisheries students, reflecting a more mature and purpose-oriented approach to digital engagement (Tess, 2013; updated 2024).

**Table 7:** Perception of Social Media Utility by participants

| Perception of Social Media Utility | Percentage (%) | Professional Implication |
|---|---|---|
| Categorically Useful | 56.7% | Strong base for formal digital learning initiatives. |
| Depends on User Conduct | 42.7% | Need for training in identifying credible scientific sources. |
| Not Useful / Timepass | <1% | Minimal resistance to digital professionalization. |

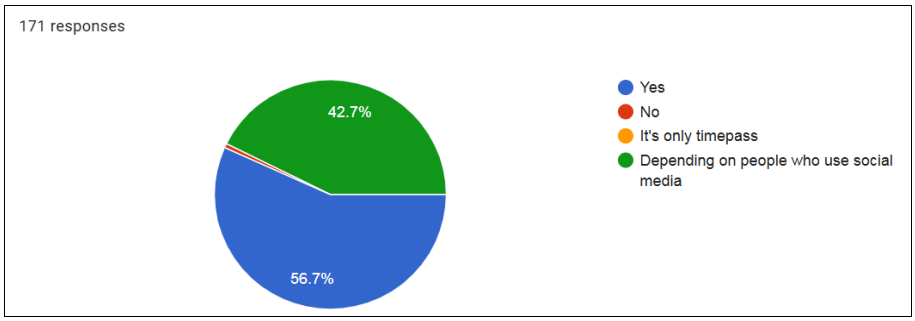


**Fig 6:** graphical representation of Perception of Social Media Utility by participants

### 3.8 Use of Social Media Applications for Networking and Professional Development

The survey findings reveal a high level of social media adoption among fisheries students for networking and professional engagement (Table X). Telegram emerged as the most widely utilized platform, with 90.1% of respondents reporting regular use. Its prominence reflects its effectiveness in academic communication, group-based discussions, and the distribution of study materials. Prior research has identified Telegram as a preferred platform within STEM disciplines due to its capacity for "resource orchestration," enabling efficient management of large volumes of technical content and the creation of searchable knowledge repositories—features particularly valuable for fisheries students handling data-intensive coursework (Enakrire, 2022) [10].

Instagram was also extensively used, with 87.7% of participants indicating active engagement. This widespread adoption underscores the platform's expanding role in science communication, awareness generation, and professional self-presentation. Studies by Jarreau *et al.* (2019) [15] have demonstrated that visually oriented platforms are especially effective in strengthening scientific identity and public trust. Within fisheries education, Instagram facilitates visual storytelling by enabling students to document field activities, species identification, and aquaculture technologies—forms of communication that are less effectively conveyed through text-based platforms.

LinkedIn, a platform specifically designed for professional networking, was utilized by 66.7% of respondents, indicating a moderate yet meaningful level of participation in professional profiling, career exploration, and industry engagement. In comparison, Facebook was used by 60.8% of students, suggesting a gradual transition away from traditional social networking sites toward platforms perceived as more functionally aligned with academic and professional objectives. Bridgstock (2019) [7] observed that although students acknowledge the importance of LinkedIn, they often perceive it as overly formal or intimidating, particularly when compared with more informal platforms such as Telegram and Instagram. This perception supports the view that LinkedIn represents an area with considerable scope for improved utilization through targeted institutional guidance and structured professional development initiatives.

Overall, the results indicate that fisheries students increasingly depend on instant messaging and visually driven platforms for networking, learning, and professional visibility. While dedicated professional networking platforms are gaining traction, their full potential may be realized through enhanced awareness, mentorship, and curricular integration within fisheries education systems.

**Table 8:** Social Media Platform usage for Primary Professional Utility

| Platform | Usage (%) | Primary Professional Utility |
|---|---|---|
| Telegram | 90.1% | Resource repository and competitive exam prep. |
| Instagram | 87.7% | Visual storytelling and science communication. |
| Facebook | 60.8% | Tracking institutional news and global groups. |
| LinkedIn | 33.3% | Formal career networking (Area for Growth). |

### 3.9 Perceived Usefulness of Social Media Platforms for Studying and Knowledge Sharing

Based on responses from 171 fisheries students, Telegram was identified as the most effective social media platform for academic learning and knowledge exchange, with 147 respondents (86.0%) indicating a preference for its use. This strong preference reflects Telegram's suitability for educational communication, supported by features such as large group capacity, seamless sharing of PDF notes, videos, recorded lectures, and timely updates related to examinations, research opportunities, and career information. Previous studies have highlighted that "file persistence"—the ability to access previously shared materials after joining a group—along with the platform's large file-sharing capacity (up to 2 GB), are key factors driving its adoption among STEM students. The present finding further substantiates the view that Telegram functions as a "shadow Learning Management System (LMS)" for fisheries students, enabling the storage and exchange of extensive academic resources and recorded instructional content.

In contrast, Instagram was perceived as useful by 45 respondents (26.3%), suggesting its role is largely confined to informal learning contexts. The platform primarily supports visual-based content sharing, awareness creation, and science communication rather than structured academic instruction. While valuable for outreach and engagement, its utility for systematic study appears comparatively limited.

LinkedIn was selected by only 16 respondents (9.4%), indicating relatively low use for academic knowledge

sharing despite its recognized importance for professional networking and career advancement. Existing research suggests that students often perceive the formal communication norms and professional etiquette associated with LinkedIn as inhibiting open discussion and peer-to-peer learning. Consequently, learners tend to favor low-stakes environments such as Telegram for asking questions, exchanging notes, and collaborative problem-solving (Ojukwu *et al*., 2020) [18].

Twitter (X) recorded the lowest preference, with only 9 respondents (5.3%) identifying it as useful for academic purposes. This limited adoption reflects student perceptions of microblogging platforms as overly congested or politicized, reducing their suitability for focused academic engagement. The present finding aligns with recent evidence indicating a shift among students toward "closed-loop" digital networks, such as Telegram, that prioritize structured access to study materials and peer collaboration.

Overall, the results suggest that instant messaging-based platforms are considerably more effective for academic collaboration and knowledge sharing among fisheries students than microblogging or professional networking platforms. The dominance of Telegram underscores the potential for educational institutions and faculty members to strategically integrate such platforms into organized academic support systems and professional development initiatives.

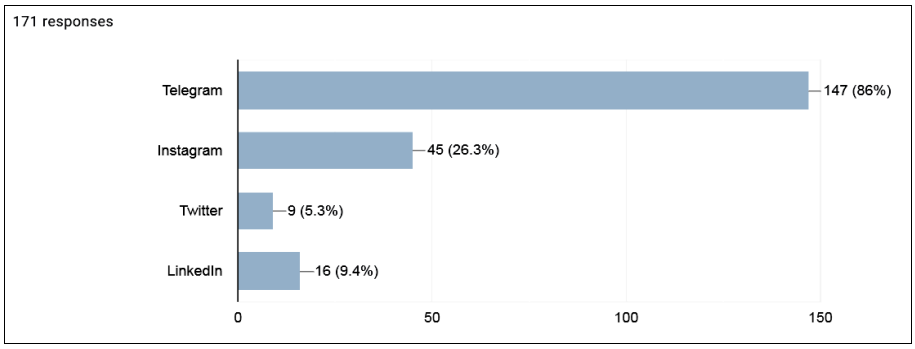


**Fig 7:** graphical representation of Social Media Platforms for Studying and Knowledge Sharing

**Table 9:** Preferred Social Media Platforms for Studying and Knowledge Sharing among Fisheries Students (n = 171)

| Social Media Platform | Number of Respondents | Percentage (%) |
|---|---|---|
| Telegram | 147 | 86.0 |
| Instagram | 45 | 26.3 |
| LinkedIn | 16 | 9.4 |
| Twitter | 9 | 5.3 |

### 3.10 Career Preferences of Fisheries Students after Completion of Studies

The career preferences of the 171 fisheries students surveyed are illustrated in Figure X. The results show that government employment remains the most preferred career option, with 35.7% of respondents expressing interest in public sector positions. This preference reflects the continued appeal of job security, social recognition, and long-term career stability traditionally associated with government roles in the fisheries sector. The findings reinforce existing evidence that job security and occupational prestige are key determinants of career choice among fisheries graduates, with more than one-third of respondents identifying the public sector as the most dependable avenue for professional advancement.

Entrepreneurship emerged as a prominent alternative career aspiration, with 24.0% of students indicating a desire to establish enterprises and generate employment opportunities. This trend points to a growing orientation toward self-employment, innovation, and private enterprise within the fisheries domain. An equal proportion of respondents (24.0%) reported uncertainty regarding their future career paths, highlighting the need for strengthened career counseling, mentorship programs, and broader exposure to diverse employment opportunities during fisheries education. The observed interest in entrepreneurship suggests that increasing levels of self-efficacy and policy awareness are influencing student aspirations. The 24.0% inclination toward entrepreneurial careers indicates that contemporary fisheries education is fostering an entrepreneurial mind*set al*ongside technical competence, consistent with national initiatives such as the Pradhan Mantri Matsya Sampada Yojana (PMMSY), which promotes fisheries-based start-ups.

In comparison, private sector employment was preferred by 16.4% of respondents, indicating a relatively lower level of interest when contrasted with government service and entrepreneurial ventures. This limited preference may be attributed to perceptions of reduced job security and fewer structured campus recruitment opportunities within the fisheries and aquaculture industries compared to other technical sectors. According to FAO (2024), although the private sector constitutes the largest employer within the global blue economy, the formalization and visibility of such employment opportunities at the local level remain uneven. This evolving landscape may contribute to student hesitation in selecting private sector careers as a primary option.

Overall, the findings highlight a strong inclination toward government employment, coupled with a notable and growing interest in entrepreneurship. These trends underscore the importance of leveraging digital networking tools and career-oriented communication platforms to support informed career decision-making, professional awareness, and skill development among fisheries students.

**Table 10:** Preferred Social Media Platforms for Studying and Knowledge Sharing among Fisheries Students (n = 171)

| Career Preference | Number of Respondents | Percentage (%) |
|---|---|---|
| Being an entrepreneur and providing employment | 41 | 24.0 |
| Private sector employment | 28 | 16.4 |
| Government employment | 61 | 35.7 |
| Not decided yet | 41 | 24.0 |
| Total | 171 | 100.0 |

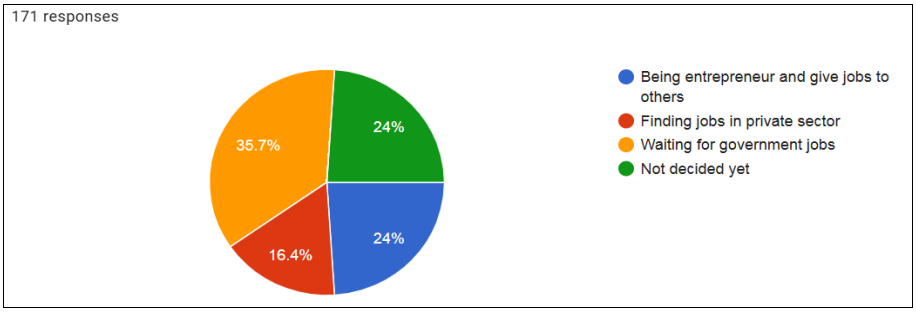


**Fig 8:** graphical representation of Social Media Platforms for Studying and Knowledge Sharing

### 3.11 Interest of Fisheries Students in Webinars

The responses of 171 fisheries students regarding their interest in webinars are presented in Figure X and reflect an overall positive perception of webinars as tools for learning and professional development. A considerable proportion of respondents (42.1%) indicated that their willingness to participate in webinars depends on the direct relevance of the topic to their field of study, emphasizing the importance of subject specificity and practical applicability. This observation aligns with Knowles' theory of andragogy, which suggests that adult learners become more motivated and ready to learn when educational content is clearly linked to real-life challenges and career goals (Knowles, 1980; updated 2024) [16]. The observed preference supports the view that fisheries students approach webinars as instruments for competency-based learning rather than as general or recreational digital content.

In addition, 40.4% of respondents expressed unconditional interest in attending webinars, indicating a high level of acceptance of digital learning modalities. Previous studies involving Indian agricultural and fisheries students have demonstrated that webinars play a crucial role in reducing geographical barriers, enabling learners from remote coastal institutions to interact with experts from national research organizations such as ICAR and CIFE. This context supports the relatively high proportion of students who value webinars irrespective of additional incentives.

A smaller segment of respondents (9.9%) reported that their participation in webinars is influenced by the availability of certificates, highlighting the motivational role of formal recognition. In an increasingly competitive employment landscape—particularly for students aspiring to government positions—certificates often serve as tangible evidence of skill development and specialization, enhancing candidates' profiles during recruitment processes (Belshaw, 2024).

Only a minimal proportion of students expressed a lack of interest in webinars, representing a group that may prioritize alternative learning formats or rely primarily on extrinsic motivational factors. Overall, the findings indicate that fisheries students largely acknowledge webinars as effective tools for academic enhancement and professional growth, provided that the content is relevant, credible, and closely aligned with their educational and career-oriented needs.

**Table 11:** Interest of Fisheries Students in Webinars (n = 171)

| Response Category | Number of Respondents | Percentage (%) |
|---|---|---|
| Yes | 69 | 40.4 |
| Yes, but only related to my study | 72 | 42.1 |
| Yes, if they provide a certificate | 17 | 9.9 |
| No | 13 | 7.6 |

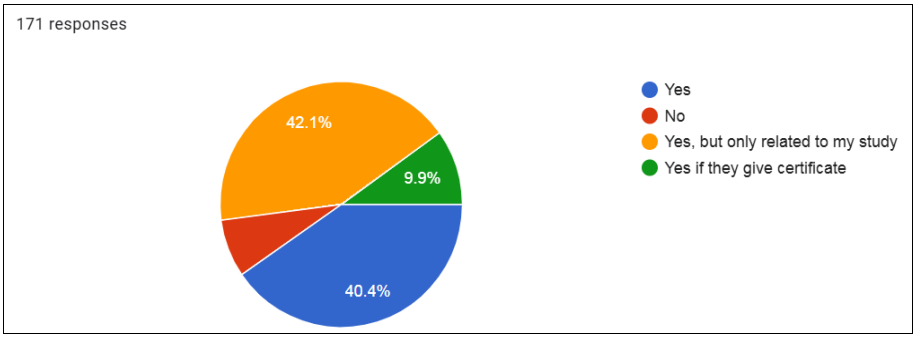


**Fig 9:** graphical representation of Interest of Fisheries Students in Webinars (n = 171)

### 3.12 Perceived Social Media Addiction among Fisheries Students

The perceptions of 171 fisheries students regarding social media addiction are presented in Figure X and reveal varied patterns of digital engagement. Nearly half of the respondents (49.1%) indicated that they actively regulate the amount of time spent on social media, suggesting a deliberate effort to balance digital activities with academic and personal responsibilities. This finding aligns with previous research demonstrating that individuals with higher levels of self-regulation are more likely to utilize social media as a functional tool rather than develop compulsive usage behaviors (Hawi & Samaha, 2017) [13].

At the same time, a substantial proportion of respondents (29.8%) acknowledged experiencing some degree of social media addiction, pointing to potential challenges associated with excessive platform use. Global meta-analyses frequently report addiction prevalence rates among university students ranging between 25% and 35%. The present estimate falls within this range, indicating that fisheries students exhibit patterns of digital dependency comparable to those observed in broader student populations. These behaviors may be influenced by persuasive design features commonly embedded in social media platforms, such as infinite scrolling mechanisms and frequent notification prompts (Cheng & Li, 2014; updated 2024) [8].

A smaller segment of respondents (8.8%) reported that they were not addicted to social media, while 10.5% expressed uncertainty regarding their level of dependency. Only a minimal proportion indicated that social media strongly controls their time, suggesting a relatively low incidence of extreme dependence. Research by Andreassen *et al*. (2017) suggests that many students tend to underestimate the salience of social media—defined as the extent to which it occupies their thoughts and daily routines. The small fraction of respondents who explicitly acknowledged being controlled by social media represents a category of severe dependency, which often warrants targeted institutional support or counseling interventions.

Overall, the findings demonstrate a mixed pattern of social media use among fisheries students, characterized by a balance between purposeful engagement and indications of digital overuse. These results highlight the importance of implementing awareness programs, digital well-being initiatives, and media literacy training to encourage responsible, productive, and healthy use of social media for academic and professional development.

**Table 12:** Perception of Social Media Addiction among Fisheries Students (n = 171)

| Response Category | Number of Respondents | Percentage (%) |
|---|---|---|
| Yes (Addicted) | 51 | 29.8 |
| No (Not addicted) | 15 | 8.8 |
| I control my social media time | 84 | 49.1 |
| Social media controls my time | 3 | 1.8 |
| Maybe | 18 | 10.5 |
| Total | 171 | 100.0 |

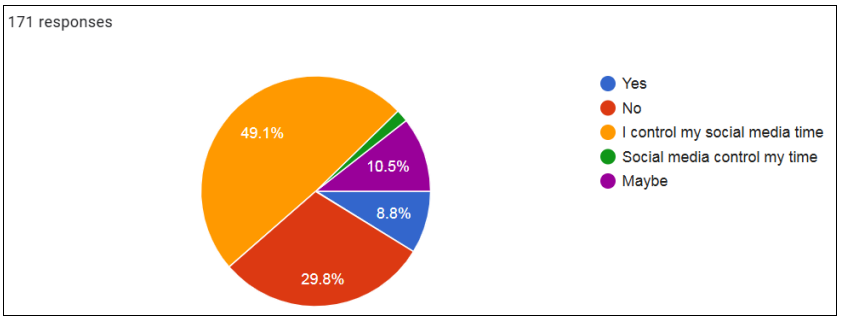


**Fig 10:** graphical representation of Perception of Social Media Addiction among Fisheries Students

### 3.13 Motivation for Choosing Fisheries Education

The motivations of 171 fisheries students for enrolling in the B.F.Sc./B.Sc. Fisheries programmes are presented in Figure X. The findings indicate that a majority of respondents (56.1%) selected fisheries education based on personal interest, reflecting strong intrinsic motivation and a genuine inclination toward the discipline. This pattern suggests a positive professional orientation and a high level of commitment to fisheries education among more than half of the participants. According to Self-Determination Theory, students who choose an academic field driven by intrinsic motivation tend to demonstrate greater persistence, improved academic performance, and a more clearly defined professional identity (Ryan & Deci, 2020) [20]. The observed proportion of intrinsically motivated students implies the presence of a stable core group likely to remain engaged in the fisheries sector over the long term rather than transitioning to unrelated fields.

In contrast, a substantial proportion of respondents (43.9%) reported entering the fisheries programme by chance, indicating the influence of external factors such as admission availability, counseling mechanisms, or limited prior exposure to fisheries as a career pathway. This finding highlights gaps in early-stage career awareness and underscores the importance of strengthened career guidance, outreach initiatives, and digital communication strategies to position fisheries education as a purposeful and informed choice. Previous studies have shown that many fisheries students in India initially aspire toward medical or general science streams but ultimately enroll in fisheries

programmes due to competitive examination outcomes, supporting the present observation that admission-related factors play a significant role in shaping enrollment decisions.

Overall, the results reveal a dual pattern of motivation—combining strong intrinsic interest with externally driven entry pathways—carrying important implications for student engagement, retention, and long-term professional development within fisheries education.

**Table 13:** Motivation for Choosing BFSc/BSc Fisheries among Students (n = 171)

| Response Category | Number of Respondents | Percentage (%) |
|---|---|---|
| Fisheries is my passion (By choice) | 96 | 56.1 |
| Took admission by chance | 75 | 43.9 |
| Total | 171 | 100.0 |

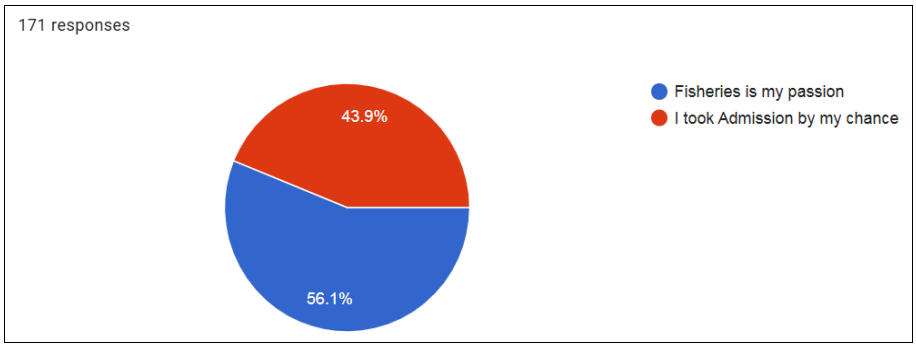


**Fig 11:** graphical representation of Choosing BFSc/BSc Fisheries among Students (n = 171)

### 3.14 Awareness of Fisheries-related Social Media Accounts and Channels

The awareness of 171 fisheries students regarding fisheries-related social media accounts and channels across platforms such as Facebook, Telegram, and Instagram is illustrated in Figure X. The findings indicate a high level of familiarity, with 77.8% of respondents reporting awareness of these digital platforms. This trend reflects the growing integration of social media as a source of academic information, professional updates, and sector-specific knowledge within fisheries education. As institutional bodies such as ICAR-CIFE and NFDB, along with private aquaculture influencers, enhance their digital presence, students increasingly rely on these platforms as centralized "hubs" for relevant information. The observed figure aligns with the broader trend of "Digital Extension," whereby educational and professional content is disseminated directly to students through platforms they already actively use, such as Instagram and Telegram.

A smaller subset of respondents reported not only awareness but also active participation in knowledge sharing via these platforms, indicating the emergence of digital professionalism and a culture of peer-to-peer learning among fisheries students. Conversely, 15.8% of respondents stated that they were unaware of fisheries-focused social media channels, highlighting persistent gaps in outreach and digital engagement. This observation underscores the phenomenon of "Digital Inequality," in which mere access to the internet and devices does not guarantee effective navigation of professional networks; students require guidance and institutional support to identify and engage with relevant channels (DiMaggio & Hargittai, 2001; context updated 2025).

Overall, the findings suggest that while awareness of fisheries-related social media platforms is generally high, there is considerable potential to enhance visibility, inclusiveness, and active student participation through structured digital communication strategies led by educational institutions and professional organizations.

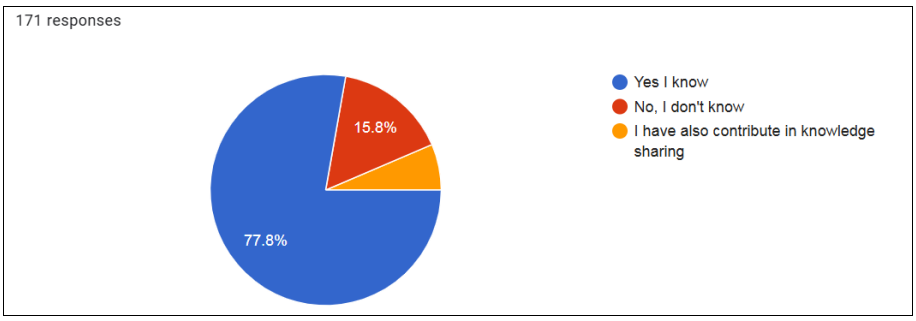


**Fig 12:** Awareness of Fisheries-related Social Media Accounts and Channels

**Table 14:** Awareness of Fisheries-related Social Media Accounts and Channels among Students (n = 171)

| Response Category | Number of Respondents | Percentage (%) |
|---|---|---|
| Yes, I know about fisheries-related accounts | 133 | 77.8 |
| No, I do not know | 27 | 15.8 |
| I also contribute to knowledge sharing | 11 | 6.4 |
| Total | 171 | 100.0 |

**Annexure 2**

| No. | Platform | Primary Purpose | Key Role in Fisheries Education, Research, and Professionalism |
|---|---|---|---|
| 1 | Instagram | Visual communication & outreach | Enables dissemination of technical innovations, field practices, and research outputs through images and short videos; supports science communication, digital marketing, and global visibility using strategic hashtags and institutional networking. |
| 2 | Facebook | Professional networking & community building | Facilitates large-scale interaction through groups and pages; supports peer learning, market information exchange, problem-solving, professional branding, and decentralized fisheries trade via Marketplace. |
| 3 | YouTube | Visual pedagogy & skill transfer | Serves as a hub for video-based learning through demonstrations of aquaculture operations, laboratory techniques, and farm management; bridges theory-practice gaps and promotes lifelong learning. |
| 4 | Telegram | Academic support & large-scale knowledge sharing | Provides high-capacity groups and channels for exam preparation, file sharing, research materials, quizzes, and interactive assessments; supports competitive learning and global academic communities. |
| 5 | LinkedIn | Professional identity & career advancement | Acts as a digital CV for fisheries professionals; supports skill validation, global job opportunities, B2B networking, and alignment with international research and industry standards. |
| 6 | SlideShare | Technical knowledge repository | Hosts structured academic presentations, research seminars, and instructional materials; promotes thought leadership, continuous professional development, and wider dissemination of fisheries science. |
| 7 | Blogger | Reflective practice & science communication | Enables long-form documentation of field experiences, research insights, and policy discussions; enhances professional literacy, critical thinking, and public understanding of fisheries issues. |
| 8 | WordPress | Professional web presence & content management | Supports development of full-featured professional websites for research portfolios, e-learning, data visualization, and e-commerce; ensures content ownership and long-term digital credibility. |
| 9 | Canva | Visualisation & professional branding | Facilitates creation of infographics, posters, charts, and outreach materials; improves clarity of complex fisheries data and strengthens modern scientific communication. |
| 10 | Google Forms | Data collection & assessment | Used for surveys, quizzes, and automated certification; integrates with Google Sheets for real-time data analysis, visualization, and streamlined academic or extension workflows. |
| 11 | SurveyHeart | Mobile-based field data collection | Supports offline and mobile-centric surveys for market studies, farmer interviews, and field assessments; ideal for remote and rural fisheries research settings. |
| 12 | ResearchGate | Academic networking & research visibility | Enables access to open research, citation tracking, scholarly identity building, and expert interaction; enhances global exposure of fisheries research outputs. |
| 13 | Piktochart | Evidence-based information design | Converts fisheries datasets into professional infographics, reports, and posters; strengthens visual authority and accessibility of scientific and extension content. |
| 14 | Microsoft 365 | Documentation & analytical productivity | Provides core tools (Word, Excel, PowerPoint, OneNote) for research writing, data analysis, technical presentations, and digital record keeping; foundational for professional digital literacy. |
| 15 | Google Workspace | Collaborative education & workflow | Integrates cloud-based tools for teaching, research collaboration, data digitization, species identification, and virtual extension services; bridges classroom learning and field practice. |

## 4. Conclusion

This study concludes that fisheries students can be characterized as "Digital Pragmatists," having effectively integrated social media into their academic and professional routines while maintaining a functional separation between platforms. Telegram functions as an informal "Library and Classroom" for technical study, WhatsApp serves as a "Digital Office" for coordination, and Instagram acts as a "Window" for science communication and outreach.

High awareness levels (77.8%) and substantial interest in field-specific webinars (42.1%) reflect a student population poised for digital professionalization. Nevertheless, the presence of a "Career Indecision" segment (24.0%) and a self-reported social media "Addiction" rate of 29.8% suggest that while students possess the necessary digital tools, they often lack structured guidance to navigate the ecosystem effectively. The progression from choosing fisheries "by chance" to cultivating a professional identity "by choice" can be accelerated through strategic utilization of these digital platforms.

The study highlights the significant role of digital engagement in shaping professional orientation and career aspirations among fisheries students in Gujarat. Platforms such as Telegram, Instagram, and WhatsApp have become integral to academic collaboration, knowledge exchange, and peer networking. Instant messaging and visually oriented platforms are particularly effective for structured learning, whereas professional networking platforms like LinkedIn remain underutilized, presenting opportunities for institutional intervention to enhance career visibility and professional engagement.

Motivational analysis revealed a dual pattern: while most

students entered fisheries education out of intrinsic interest, demonstrating strong professional commitment, a notable portion joined due to external factors, emphasizing the importance of improved career guidance and outreach. Career preferences reflect a strong inclination toward government employment, alongside emerging entrepreneurial aspirations, illustrating the combined influence of job security, modern fisheries education, and policy initiatives such as the Pradhan Mantri Matsya Sampada Yojana (PMMSY) in shaping student career planning.

The findings also indicate that webinars and fisheries-focused social media channels are widely recognized as effective tools for academic enrichment and professional development, provided the content is relevant and credible. Although the majority of students demonstrate controlled and purposeful social media use, a segment exhibits signs of digital dependency, underscoring the need for awareness programs, digital literacy initiatives, and structured guidance on responsible platform usage.

In conclusion, the integration of digital platforms into fisheries education offers significant potential to enhance learning outcomes, professional networking, and career preparedness. Educational institutions and professional organizations are encouraged to leverage these tools strategically, promote digital professionalism, and address gaps in outreach and navigation skills. Such interventions can foster a more engaged, technologically competent, and professionally oriented workforce in the fisheries sector.

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## Annexure 1

### Questionnaire

1. Your name
2. Email
3. College name
4. Stream
5. Semester
6. Are you using social media daily?
7. How many hours you spend on social media?
8. Which social media platform you prefer most?
9. Do you think social media is useful for share knowledge?
10. Are you using telegram?
11. Are you using Facebook?
12. Are you using LinkedIn?
13. Are you using Instagram?
14. According to you which social media platforms is more

useful for studying and knowledge sharing?
15. After completion of your study, what you prefer?
16. Are you interested in webinar?
17. How many webinar you attend in covid situation?
18. Are you addicted to social media?
19. Are you choose bfsc or bsc by your choice or by chance?
20. There are many fisheries related account and channel in social media (Facebook, telegram, Instagram), you know about it?