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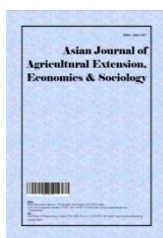
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# **Perceptions of Fisheries Professionals with Reference to Change in Minimum Qualification for Agricultural Research Services**

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## **Authors' contributions**

*This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.*

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## **ABSTRACT**

A study is done with the objective of assessing perceptions of fisheries professionals with reference to revised notification of minimum qualification being Ph.D. for Agricultural Research Service (ARS). Information has been collected from 50 Masters and 50 Doctorate fisheries professionals/students of ICAR-CIFE, Mumbai, using an online Google form and adopting quantitative and qualitative methods. Non parametric Mann Whitney U test is used to check if there is any difference between perception of Masters and Doctorate students. Study reveals that before the notification becoming a 'Scientist' was the first career choice of fisheries professionals, followed by 'Assistant Professor' and 'Officer in State Department of Fisheries'. However, after the notification, the first choice has changed to becoming 'Assistant Professor' followed by 'Officer in State Department of Fisheries' and then 'Scientist'. Students also perceive advantages and disadvantages of this revised notification. Acceptance of the notification is relatively lower among Masters Students, with a statistically significant difference between the two student groups.

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## 1. INTRODUCTION

Agricultural Research Services (ARS) is the research service of the Indian Council of Agricultural Research (ICAR) under the Department of Agricultural Research and Education (DARE), Ministry of Agriculture and Farmers' welfare, Government of India [1]. Agricultural Scientists Recruitment Board (ASRB) is an independent recruitment body for the ICAR. It plays a key role in recruiting the best quality scientists and other management personnel for the ICAR Headquarters and research institutes across the country. Recruitment to entry-level posts of ARS of ICAR is through an All-India Competitive Examination. Rendering other assistance to the council in personnel matters like promotion, conducting National Eligibility Test (N.E.T.) exam for the initial recruitment as Assistant Professor/Lecturer in the State Agricultural Universities (S.A.U.s), recruitment to posts in the combined cadres of administrative officers/finance and accounts officers of the ICAR which are required to be filled by direct recruitment, aids and advises the council in evolving and implementing policies related to induction of human resource and its development, reforming and refining the talent-search strategies to meet emerging needs of the National Agricultural Research and Education System (NARES). ASRB conducts all India competitive examinations for ARS, and the minimum eligibility for this examination until now was a Master's degree in the respective disciplines. However, a notification on 12th February 2019 had the revised eligibility criteria for this exam. As per this notification, minimum eligibility was revised as a Ph.D. degree in the respective discipline.

Perception of fisheries professionals and change in the career aspirations if any with reference to the change in the qualification has not been studied. In this regard it is necessary to review what is meant by career. Yun and Min [2] defined a career as sequences of preoccupation, occupation and post-occupation positions that a person can achieve during a lifetime. Arnold [3] states that career is taken as series of employment-related roles, activities, and experiences encountered by a person over time. It is a sequence of separate but related work activities that provides continuity, order, and meaning in a person's life whereas career aspiration means how much a person is inclined

to desire success and achievement through the career which has been chosen. Such career aspirations are conceived by interaction between personal characteristics, social and environmental factors, with cognitive factors. Thus, career aspirations can be described as the most reasonable and realistic alternative for choosing career alternatives. It is assumed that the students have some plan to pursue a career during the course of their studies after getting their degree. They aspire in terms of their choice of some job avenues open to them. Ansari and Ansari [4] conducted a study on students' career aspirations in agriculture and reported that, pursuing higher studies such as M.Sc. /Ph.D. was the most preferred career aspiration of undergraduate agriculture students followed by becoming a scientist in ICAR system, securing an administration position in SAU/ICAR, securing a job in central government whereas becoming a professor/teacher in an SAU was the least preferred career choice. Ramesh et al. [5] reported that most undergraduates aspire to have careers in government organizations despite the dwindling employment opportunities in the public sector. Das and Chowdhury [6] reported that a higher percentage of students (30%) aspired to be ARS. Vineel and Rachana [7] reported that majority (55.41%) of students aspired for a government job with higher proportions of girl students (62.79%) compared to boys (52.63%). Rout et al. [8] reported that greater part of the students liked to get Government job after graduation, followed by pressing together higher studies, for example, doing M.Sc./Ph. D. From this review it can be assumed that majority of students have some pre-decided career plan according to their degrees. In the same manner the revised ARS notification (2019) has lead to a number of discussions among the students. But the perception of students towards this notification, any change of their career plan due to this notification has not been reported by any study. Accordingly, this study presents this information with reference to fisheries professionals.

## 2. METHODOLOGY

For the study a person who has a graduation degree in fisheries sciences is considered a fisheries professional. The study is conducted among 100 fisheries students of ICAR-CIFE, Mumbai and among 100 students, an equal number of respondents are selected from Ph.D.

and M.Sc. Care has been taken to select students across different (11) fisheries disciplines offered by ICAR-CIFE like Fisheries Resource Management (FRM), Aquatic Environment Management (AEM), Aquaculture (AQC), Post-Harvest Technology (PHT), Aquatic Animal Health Management (AAHM), Fish Nutrition & Feed Technology (FNT), Fish Physiology and Biochemistry (FPB), Fish Genetics and breeding (FGB), Fish Biotechnology (FBT), Fisheries Extension (FEX) and Fisheries Economics (FEC).

Information is collected using a Google form questionnaire and analyzed by following qualitative and quantitative methods. It included questions on student profile, year, discipline, the reason behind choosing the discipline, native place, parents' job and education. Information on how they became aware of this notification and the advantages and disadvantages of notification as perceived by students have been measured using a five-point Likert scale on agreement. The scale has points strongly agree, agree, neither agree/disagree, disagree, and strongly disagree. Students' acceptance of this notification has been recorded through another three-point agreement scale (accept, reject, neither accept nor reject). The obtained scores have been normalized using the formula given below and then categorized as low (0.33), medium (0.34-0.66), high (>0.67).

$$\text{Normalized Score} = \frac{(\text{Actual value} - \text{Minimum value})}{(\text{Maximum value} - \text{Minimum value})}$$

An enquiry has been made to check if this revised notification has changed the students' career plans. For this, students ranked their career aspirations before and after the notification. Reasons for having this perception and any change in career plan have been recorded. Thereafter, the suggestion from students has been taken in the open-ended format, which is later collated. Mann Whitney U Test has been performed to test whether there was any significant difference between the perceptions of M.Sc. /Ph.D. student groups at a 5% level of significance. The test statistic for the Mann Whitney U test is denoted by U, and it is defined through U<sub>1</sub> and U<sub>2</sub> below.

$$U_1 = n_1 n_2 + \frac{n_1(n_1+1)}{2} - R_1$$

$$U_2 = n_1 n_2 + \frac{n_2(n_2+1)}{2} - R_2$$

Where,

$n_1$  = sample size for M.Sc. and  $R_1$  = sum of the ranks in M.Sc.

$n_2$ =sample size for Ph.D. and  $R_2$  = sum of the ranks in Ph.D.

### 3. RESULTS AND DISCUSSION

Profile of fisheries professionals have been collected and is presented in Table 1. The study reveals that, majority of students are from rural areas (40%), followed by urban (34%) and semi-urban regions (26%). In a similar line, Sharma et al. [9] also reported that most students (60%) from rural areas are taking an interest in agriculture compared to urban areas. Ananthan et al. [10] conducted gendered profile and academic analysis among fisheries professionals in all India levels and reported that around two-thirds (59.32%) of student's hail from rural areas, and most students (72.71%) hailed from households with an annual income of ₹ 2 lakhs.

On being asked why they have sought admission in a particular discipline, it has been reported that most fisheries professionals (68%) have chosen the discipline based on their own preference. However, other reasons are like better scope for ARS (23%), job opportunities abroad (5%), jobs in other sectors (2%), while 6% have chosen based on their teachers' suggestions.

The study findings among undergraduate agriculture students are very different from current findings. Arunachalam et al. [11] reported that around 70% of undergraduate students aspired to settle in suitable positions in any government department, and 40% were interested in starting their own farms. Bromley [12] studied the influences and motivation of students found that the students' base their career choice on school teachers and parents.

Sathyashri and Arunachalam [13] reported that the factors such as getting personnel higher value, parents' pressure, the influence of teachers, family's economic condition and their personal interest were the major push factors deciding the higher educational aspiration of the students. Umesh and Tekale [14] concluded that nearly half of the rural youth had a medium level of aspirations towards agriculture and 17.50% of the rural youth had a high level of aspirations. However, Hari et al. [15] stated that only 7% of the respondents in Kerala and 11% of the youth respondents in Rajasthan preferred agriculture and allied industries as their chosen career option.

**Table 1. Students' profile**

Age	<b>24 ± 3.174 SD</b>	
Composition of students	M.Sc.	
	1 <sup>st</sup> year	48%
	2 <sup>nd</sup> year	52%
	Ph.D.	
	1 <sup>st</sup> year	42%
	2 <sup>nd</sup> year	28%
Resident	3 <sup>rd</sup> year	30%
	Urban	34%
	Semi Urban	26%
Father's occupation	Rural	40%
	Central Government	13%
	State Government	34%
	Private	8%
	Own business	33%
	Retired from job	12%
Mother's occupation	House wife	64%
	Central Government	2%
	State Government	13%
	Private	7%
	Own business	6%
	Retired from job	8%
Family Income	₹ 1.51 to 2 lakhs	2%
	₹ 1 to 1.5 lakhs	4%
	₹ 50,000 to 1 lakh	24%
	₹ 20,000-50,000	47%
	₹ 10,000 to 20,000	16%
	< ₹ 10,000	7%

**Table 2. Perceived advantages and disadvantages of the revised notification**

<b>Advantages of the notification</b>		
<b>Statements</b>	<b>M. Sc.</b>	<b>Ph.D.</b>
Increased proficiency as a scientist	0.57 (Medium)	0.69 (High)
Increased research skills	0.76 (High)	0.77 (High)
More academically qualified people will enter research system	0.66 (Medium)	0.65 (Medium)
Research quality will increase	0.76 (High)	0.77 (High)
Students will be focused to complete M.Sc./Ph.D. course on time	0.81 (High)	0.88 (High)
<b>Disadvantage of the notification</b>		
Reduced creativity in research	0.75 (High)	0.54 (Medium)
Preference for becoming a scientist will reduce	0.73 (High)	0.53 (Medium)
Increased stress for course completion on time	0.79 (High)	0.73 (High)
Increased anxiety and feeling that previous batches have benefited	0.75 (High)	0.68 (High)

Agrawala [16] reported that skills, competencies, and abilities were the most important factor, and the father was the most significant individual influencing the career choice of Indian students. However, in the current study, teachers' suggestion is regarded as one of the influencing agents for discipline selection. The present study reveals that 44% of students came to know about this notification from the ASRB website, 38% from social media posts, 12% from conversations

with friends, and 6% through teachers. Pandey et al. [17] have also stated that social media exposure in higher agricultural education is increasing.

The students perceive both advantages and disadvantages of revised notification, and it is presented in Table 2. It reveals a medium to a high level of agreement for the advantages and disadvantages of revised notification.

Acceptance/rejection of this notification reveals that the majority of students (56%) are rejecting this notification while 13% are accepting and the other 31% neither accepting nor rejecting. The reasons for acceptance/rejection are presented in Table 3. It is observed that less competitors for the ARS examination are the reason for acceptance for the majority of students (46%), whereas, for rejection, the reason is the implementation of this notice is very sudden (59%).

An enquiry has been conducted to check if this revised notification has changed the students' career plans. For this, students ranked their career aspirations before and after the notification. The information presented in Table 4 reveals a clear change visible in the career plans before and after the notification. The ARS, which was the first rank before notification, has changed to the third rank after the notification. In addition to the change in career plan, change is also reported about students' decision towards undertaking Ph.D. A total of 48% report that willingness to complete Ph.D. has increased.

Ansari and Ansari [4] also revealed that for undergraduate agriculture students' major career aspirations was to join higher studies or serve in the ICAR system. Saini and Singh [18] also

concluded that majority of the respondents aspired for 'Government services' first then 'Private services. However, Jondhale and Wattamwar [19] revealed that more food and technology students aspired to secure jobs in private organizations while 41.38% of students had an aspiration to secure administrative positions in government departments. Niketha et al. [20] revealed that the majority of agricultural students aspired to complete their post-graduation (83.33%) and to work in the government sector (83.33%).

Some suggestions have been provided by students like, the minimum qualification should be M.Sc. Some extra points can be given to those who have completed Ph.D., and additional increments in position and salary can be given to those who have completed Ph.D. It has been emphasized that to increase the country's agricultural productivity, there is an immense need to focus on the quantity and quality of agricultural education [21, 22].

Mann Whitney U test has been conducted to test if there was a significant difference between the perception of M.Sc. and Ph.D. students, and the results are presented in Table 5. It shows that there is a statistically significant difference found among the M.Sc. and Ph.D. student groups ( $P=0.05$ ).

**Table 3. Reasons for acceptance and rejection of notification**

Reasons for acceptance(n=13)	(%)
Less competitors for ARS examination	46
More conscious for completing the course on time	19
Increased proficiency as a scientist	29
Relatively less effect on their discipline	6
Reasons for rejection (n = 56)	
Implementation of this notice is very sudden	59
Increased stress for course completion time	18
Increased confusion in career options	9
Reduced preference for becoming a scientist	14

**Table 4. Career aspirations before and after the notification**

Before	After	Rank
ARS	Assistant Professor	1
Assistant Professor	Officer in Department of Fisheries (DoF)	2
Office in DoF	ARS	3
Subject Matter Specialist (SMS) in Krishi Vigyan Kendra (KVK)	SMS in KVK	4
Banking	Jobs in other country	5
Jobs in other country	Banking	6
Private sector	Private sector	7
Entrepreneur	Entrepreneur	8



**Table 5. Difference between perception of M.Sc. and Ph.D. students**

<b>Mann Whitney U Test</b>	<b>Z value</b>	<b>Asymp. Sig. (2-tailed)</b>
Acceptance level	-2. 694	0.007
Makes you more proficient as a Scientist	-2. 759	0.006
Increase your research skill	-3. 995	0.01
Desire to become Scientist has reduced	-3. 115	0.002
Should increase in Ph.D. seats	-3. 909	<0.001

#### 4. CONCLUSIONS

Current study reveals that the change in ARS exam qualification has resulted in changes in students' career plans, such as changes in their aspirations and willingness to do/complete Ph.D. on time. As this notice is affecting students' career plans so, to cope up with this current situation, the students can follow SODI Model for career planning given by Law and Watts [23]. The model encapsulates four concepts like Self-awareness, Opportunity awareness, Decision-making and Planning and implementation of plans. Self-awareness phase, the individual having knowledge can understand their own personal development. However, understanding of personal development is available only in few courses of the social science division at ICAR-CIFE, Mumbai and some courses organised by Personality Development and Career Counselling Cell. But not all students undergo these courses. In the Opportunity awareness phase, the understanding of the general structures of the world of work, including career possibilities and alternative pathways, is needed. It is observed that students are aware of career possibilities in limited areas (ARS, Assistant Professor, DoF, Central/State, Bank, and Private). Students' seem to have less desire to explore alternative pathways (NGOs, Corporate Social Responsibility and Entrepreneurship). In Decision-making and planning, an understanding of how to make career decisions and be aware of pressures are required and high priority for job security while making career decisions. It is felt that if the students have the right attitude and appropriate skill level in a range of areas, they can translate job and career planning into reality. This will result in better prospects for the career development of fisheries professionals.

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#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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