Chapter 12

Higher education faculty attitude, motivation and perception of quality and barriers towards OER in India

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Summary

The premise of this study is that teachers' conceptions of the quality of Open Educational Resources (OER) and their attitudes and motivations towards using OER will influence whether and how they use and/or contribute open resources. Understanding teachers' attitudes, motivations and barriers to OER use and comparing data across institutions may help to identify the issues that influence OER uptake in India. This chapter attempts to answer the following four research questions: How are teachers' attitudes towards OER situated in the context of teaching and learning? What are teachers' motivations for using OER and sharing their work as OER? How do teachers perceive the quality of OER? What barriers to using OER do teachers perceive?

This study employed a mixed methods approach, using a survey to gather the quantitative data which form the focus of this chapter, as well as workshop engagements and interviews to collect qualitative data. The research was carried out at four universities representing the varying contexts of higher education teachers in India – one state, open university; one dual-mode university; one semi-urban university; and one multi-campus, private university – and amongst the WikiEducator India community. At each university, a three-day OER workshop took place where 30 teachers learned about OER and completed a survey. In addition to the 120 workshop participants engaged at the four universities, the survey was sent to the 107 members of the WikiEducator India community who participated in the research process. Of the total of 227 teachers who were asked to take the survey, 149 survey responses were received, of which 117 (comprised of 43% females and 57% males) were useable. A total of 28 educators from the universities were also interviewed. ▶

Despite the relatively low levels of awareness of OER demonstrated by Indian teachers prior to the research process, they were very positive about creating and sharing OER, while being slightly less enthusiastic about using externally developed materials. Many of the positive attitudes stemmed from: the sense of satisfaction obtained when others use and adapt their materials; useful feedback received from peers; increased reputational profile experienced as a result of sharing; collaborative opportunities introduced in the sharing process; and the belief that their own sharing would encourage other teachers to do the same. The teachers were mildly cautious about OER quality issues, but said that they would use OER if they were appropriate for their needs. They acknowledged a number of barriers to using and sharing OER, including a lack of understanding of intellectual property, copyright and open licensing; a lack of time; and the lack of funding, institutional incentives and support for OER activities.

The authors recommend that advocacy to raise awareness of OER in Indian universities should be a top priority, with a particular focus on teachers and senior administrators; teachers should be released from certain duties and provided with the time required to engage in OER activity; incentives in the form of awards and/or recognition in promotion should be provided for teachers to undertake OER development; quality assurance mechanisms for OER produced should be introduced; and continuous professional development opportunities should be provided to teachers through regular workshops and training sessions on advanced information and communication technologies and OER skills.

The dataset arising from this study can be accessed at:
https://www.datafirst.uct.ac.za/dataportal/index.php/catalog/578

Acronyms and abbreviations

ATOER	Attitude Towards Open Educational Resources
CC	Creative Commons
CEMCA	Commonwealth Educational Media Centre for Asia
HEI	higher education institution
ICT	information and communication technologies
NMEICT	National Mission on Education through ICTs
OER	Open Educational Resources
ROER4D	Research on Open Educational Resources for Development
SD	standard deviation

Introduction

Higher education in India faces numerous challenges in terms of "expanding the system with equity, of improving quality while expanding the system and managing the sector efficiently

and effectively" (Varghese, 2015, p.2). In order to address reform of the higher education system, the Indian government's National Knowledge Commission recommended upgrading infrastructure, improving the training of teachers, and continuous assessment of syllabi and examination systems (Pitroda, 2006). In 2008, the Commission called for a national e-content and curriculum initiative to stimulate the creation, adaptation and utilisation of Open Educational Resources (OER) by Indian higher education institutions (HEIs), and to leverage OER produced outside India (Perryman & Seal, 2016) to overcome the challenges of quality educational materials. OER are "teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions. Open licensing is built within the existing framework of intellectual property rights as defined by relevant international conventions and respects the authorship of the work" (UNESCO, 2012, p.1). The types of learning materials included in the category of OER are textbooks, manuals, research papers, guides, videos, audio presentations and other online resources.

The adoption of OER has surfaced a new set of innovative teaching and learning practices, as well as presented a potentially cost-effective mechanism to improve the quality of educational offerings by optimising the use of freely available and openly licensed online resources (Daniel, Kanwar & Uvalić-Trumbić, 2009). While OER can be used by anyone, irrespective of whether they are based in a formal learning environment or not, the value proposition is particularly strong for universities that can utilise OER to improve the cost-efficiency of packaged learning materials (Wiley, Green & Soares, 2012).

Utilising OER purportedly reduces the time associated with developing courses and programmes, facilitates sharing of knowledge, preserves and disseminates indigenous knowledge, and improves educational quality at all levels (Kanwar, Kodhandaraman & Umar, 2010). For teachers and students, OER provide access to global online content that can be localised without legal restriction, introduce greater choice in terms of available learning resources and create inclusive learning communities (Butcher, 2011).

India has over 700 universities, including 17 open universities, but the use of OER in tertiary education does not appear to be widespread, despite several sporadic attempts and a number of initiatives to promote the use of OER, both nationally and institutionally. In 2013, the National Repository of Open Educational Resources[1] for K–12 educational materials was established. This activity was further bolstered, when, in 2014, the flagship project of the Ministry of Human Resource and Development, the National Mission on Education through Information Communication Technologies (NMEICT), adopted open licensing policy guidelines.[2] Institutionally, the Indira Gandhi National Open University Post Graduate Diploma in E-learning started using OER as far back as 2010 and several Indian teachers have participated in Learning4Content[3] workshops on the WikiEducator[4] platform. The Commonwealth Educational Media Centre for Asia (CEMCA) has assisted several organisations in the development of content using WikiEducator, and the Staff Training and Research Institute of Distance Education at Indira Gandhi National Open University

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1   http://nroer.gov.in/welcome
2   http://www.sakshat.ac.in/Document/OER_Policy.pdf
3   http://wikieducator.org/Learning4Content
4   https://wikieducator.org/Main_Page

trained educators to use MediaWiki to develop self-learning materials for distance education in 2008.

Typically, OER are prepared by teachers in a specific context to assist students in their learning process. Teachers are therefore central to the production and reuse of OER. However, Petrides, Jimes, Middleton-Detzner, Walling and Weiss (2011, p.41) reported findings based on research conducted by Livingston and Condie (2006) in Scotland which indicated that student learning was tempered by "teachers' lack of expertise in fully leveraging the open resources to assist students to become more independent learners" and that "teachers lacked the technical skills to effectively integrate" new OER into their courses. Petrides et al. also expressed concerns in an open textbook project and reported that:

> … faculty with lower comfort levels with using online technology made use of open textbooks in ways that exemplified more traditional ways of working with materials, there exists a need to build on the technology, practices and tools made possible by open textbooks to enhance teaching and learning practices. Furthermore, the research illuminates the potential importance of leveraging teachers' existing curriculum needs, teaching practices, and technological efficacy and expanding professional development to facilitate future open textbook use. (2011, p.46)

Within this context, there is a need to understand why some teachers share their work openly while others do not, and it is necessary to understand teachers' attitudes and motivations that may influence more effective use of OER. Olcott (2012) suggested that further research needs to be conducted to examine the concept of Open Educational Practices and OER issues with regard to faculty incentives and career advancement in universities. There is therefore also a need to understand how teachers' predisposition towards OER and their espoused views about pedagogical practices and innovations determine their OER practices.

Previous research indicates that teachers' conception of teaching and learning influences how they teach and engage students in the classroom (OECD, 2009; Rubin & Fernandes, 2013). The premise of this study is that teachers' conceptions of the quality of OER as well as their attitudes and motivations towards using OER will influence whether and how they use and/or contribute OER. Understanding their attitudes, motivations and barriers to OER use, and comparing data at institutional level and within a national online OER community would help to identify the issues that influence OER uptake in India. This chapter therefore critically examines a conceptual model of understanding OER adoption (encompassing both use and contribution) by teachers in universities and in WikiEducator India, presenting intertwined theoretical constructs of teachers' attitudes, motivations, perceptions of quality and barriers to uptake.

Literature review

Pegler (2012) suggests that reuse of OER can be dependent on technical, motivational and quality factors. It is therefore useful to study the aspects of attitude, motivations, perceptions of quality and barriers to uptake in terms of academic values and OER practice in India.

Attitude

Zimbardo and Leippe define attitude as: "An evaluative disposition toward some object based upon cognitions, affective reactions, behavioral intentions, and past behaviors … that can influence cognitions, affective responses, and future intentions and behaviors" (1991, p.51).

Attitude influences an individual's choice of action and response to specific stimuli. Attitudes are latent and not directly observable, but they are revealed by actions and behaviours that are observable. In a study in the United Kingdom, Rolfe (2012) reported that new staff members had greater concerns about copyright and were more positive about using resources as a cost-saving measure, whereas longer-standing members of staff considered it difficult to adapt resources and contextualise them for their specific needs. Venkaiah (2008) reported a positive attitude among teachers towards OER in a study conducted in Indian universities. This positive attitude did not, however, result in increased use of OER in teaching and learning. Reflecting on attitudes towards OER in India in particular, Perryman and Seal suggest:

> Research into OER use and attitudes towards openness is vital in informing projects that are relevant to local contexts and which contain realistic objectives. To date, research on OER use in India has tended to focus on overviews of OER initiatives (e.g. Das, 2011), the attitudes and practices of teachers and academics (e.g. Sharma et al., 2014) and teacher educators (Perryman et al., 2015; Buckler et al., 2014; Perryman, 2013a), rather than ranging more widely. (2016, p.2)

Motivation

"To be motivated means to be moved to do something" (Ryan & Deci, 2000, p.54). The concept of motivation therefore refers to why people think and behave as they do. People do certain things to satisfy their needs, which motivates them to behave or do things in a particular way. Motivation can be intrinsic or extrinsic, and individuals can consider different factors as motivators or demotivators.

Rolfe points out that "understanding the motivations and characteristics of potential users [of OER] is important to develop strong and sustainable strategies and practices" (2012, p.10). While market positioning seems to be a key incentive amongst senior managers for adopting OER in institutional contexts, academic staff tend to view "OER in terms of educational standards and opportunities" (Nikoi & Armellini, 2012, p.173). The Centre for Educational Research and Innovation and the Organisation for Economic Cooperation and Development (CERI/OECD, 2007) examined four motivating factors in teachers' adoption of OER: (1) sharing knowledge being a basic academic value; (2) increased personal reputation in an open community; (3) being a leader in their field; and (4) there being little value in keeping a resource closed. According to Hilton and Wiley (2009), the four major motivating factors for using OER are to: (1) receive increased exposure; (2) do some good; (3) give new life to out-of-print works; and (4) improve the quality of educational resources.

Quality

OER are "useful for improving teaching quality in areas, such as providing illustrations, teaching difficult subjects, and supporting student progression" (Nikoi & Armellini, 2012, p.176). Teachers do, however, see a problem in using OER without ensured reliability or quality assurance of the open content (Richter & Ehlers, 2010). Regarding their own potential OER creation activity, many teachers fear that "their resources [are] not good enough to be shared openly and that by releasing teaching materials they [are] making themselves vulnerable to receiving overly critical feedback from their colleagues" (Brent, Gibbs & Gruszczynska, 2012, p.6). In a survey of Indian teachers, Perryman and Seal report that "78% of Indian educators indicat[ed] that they use[d] OER to compare others' teaching materials with their own in order to assess their materials' quality" (2016, p.8).

Barriers

Despite positive attitudes and motivation to use OER, teachers find it difficult to use and/ or contribute OER for a variety of reasons, including a lack of supportive institutional policy, technological difficulties and poor understanding of OER. In order to have an enabling environment for OER adoption, it is necessary to reduce the real as well as perceived barriers to OER usage. Common barriers cited include "the lack of awareness about OER; the university elitism that it was not invented here so we'll use our own; faculty resistance given 'my content is king in my kingdom'; and of course the lobbying of many publishers who see the OER movement as a threat to their historical business monopoly over content" (Olcott, 2012, p.284). According to Hilton and Wiley (2009), four common obstacles to OER use and contribution are: (1) the amount of time necessary to put OER in a format that can be shared; (2) a desire to keep the resource from being seen by others; (3) few if any external reward mechanisms for creating OER; and (4) the concern that nobody will want to use the OER created.

This study is therefore based on the premise that teachers' predispositions and espoused views about OER, their motivations to use and create OER, their perceptions of the quality of OER, and the barriers they encounter while using and contributing OER could be related to actual use and contribution of OER.

Based on these assumptions, this chapter attempts to answer the following questions:

1. How are teachers' attitudes towards OER situated in the context of teaching and learning?
2. What are teachers' motivations for using OER and sharing their work as OER?
3. How do teachers perceive the quality of OER?
4. What barriers to using OER do teachers perceive?

Methodology

This study employed a mixed-methods approach in order to address the research questions. Quantitative data gathering was undertaken in the form of a survey, and qualitative data were collected in workshops and interviews.

Research site and participant selection processes

To carry out this study, four universities representing the varying contexts of higher education teachers in India were identified as study sites, based on the researchers' perception of those institutions' educators' prior awareness of OER (in turn based largely on work conducted by CEMCA). Given the previous CEMCA exposure, the researchers also had easy access to senior management in those universities, who permitted them to conduct workshops and the associated research. Research sites were comprised of:

- One state, open university: The newest open university in India at the time of research, this institution is situated in northeast India and offers only distance-education courses. The university uses printed texts as study materials, and the awareness of OER was moderate.
- One dual-mode university: This university is located in a large metropolitan city in central India, and offers both distance and face-to-face (contact) programmes. It has several regional centres across the country and operates largely in the Urdu language. The level of OER awareness is relatively low, though teachers engaged in distance teaching have been developing printed text materials for students.
- One semi-urban university: This university caters largely to students from rural areas of the southeastern part of India, and, apart from face-to-face, campus-based teaching, caters to several other educational institutions in the region that are affiliated with the university. Levels of OER awareness are extremely low.
- One multi-campus, private university: This university's main campus is located on the outskirts of a city in eastern India, but it has multiple satellite campuses in the state. It is a private university with relatively young faculty members who teach in face-to-face mode. OER awareness levels are extremely poor.

Data were also collected through an online survey from the online WikiEducator India Community, where members had been using OER for some time.

Quantitative data collection

Survey

In order to develop the survey, information on previous research in the field was gathered and a questionnaire consisting of five major parts was designed.

Part A of the questionnaire pertained to demographic details, and consisted of 16 items prepared on the basis of the Research on Open Educational Resources for Development (ROER4D) instrument harmonisation process,[5] while bearing in mind contextual aspects of the Indian higher education system.

Part B aimed to gather data and critically analyse teachers' perceptions and beliefs around sharing OER. As there was no standard attitude measurement scale available for OER, the researchers in this study created an Attitude Towards OER (ATOER) scale, which

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5   Within ROER4D, a research question harmonisation process was initiated by the Network Hub for different sub-projects. See Trotter, H. (26 May 2014). *ROER4D Question Harmonisation Process*. ROER4D Blog. Available at http://roer4d.org/892.

was incorporated into the overall survey design.[6] Based on the input of 15 OER experts, the ATOER scale was winnowed down from 26 items to 17 after a validity and reliability test, with 13 items devoted to respondents' attitudes towards sharing OER and four items focused on their attitudes towards using OER.

Part C consisted of questions assessing motivation towards use of and contribution to OER. This section consisted of 19 items based on intrinsic and extrinsic motivation factors.

Part D dealt with perceptions of OER quality. This section contained 13 items, which focused on different criteria for defining the quality of OER.

Part E focused on barriers towards the adoption of OER. This section consisted of 18 items divided into seven sub-themes: technical barriers, personal barriers, institutional barriers, financial barriers, sociocultural barriers, linguistic barriers and legal barriers.

The questionnaire was administered in paper format as well as online. The paper-based questionnaire was circulated amongst the workshop participants in each of the four university sites on day three of the three-day workshop conducted as part of the qualitative data-gathering strategy. The particular timing for administering the survey was based on the fact that when the validity of the survey questions was tested, many respondents revealed that they were not aware of OER as a concept, meaning that they did not have well-formed attitudes or motivations regarding OER. The workshop provided an opportunity to introduce the concept of OER and the practices associated with their use. Participants were therefore able to develop or situate their feelings regarding OER into a broader set of values. A limitation of this approach is that their responses remained hypothetical, precisely because they had yet to have real experiences with OER. Thus, while exposure to OER during the workshop was crucial for many respondents in terms of being able to identify their attitudes and motivations regarding OER, for many these assertions were made without the benefit of prior experience and may not reflect how they engage with OER in the future. Given that this lack of OER awareness and experience in working with these resources is a common feature in Indian higher education, the initial assertions made by respondents in the survey represent the best approximations of their attitudes and motivations regarding OER.

The online questionnaire was created using SurveyMonkey, and the link was distributed via email to the WikiEducator India community, who had prior experience of using OER.

Qualitative data collection

Workshops

A workshop approach with supplementary interviews was adopted as the primary means of qualitative data collection. The three-day Workshop on Open Educational Resources for Development (with a fourth day for interviews) was designed to be participatory and to promote teachers' understanding of OER, while serving as a forum for data collection. Workshops were used to introduce the participants to OER, administer the questionnaire and identify participants for interviews. The following data collection strategies were implemented in the workshop:

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6   For an exhaustive analysis of the development and utility of the ATOER scale, see Mishra, Sharma, Sharma, Singh and Thakur (2016).

- "Just-a-minute" sessions were planned to draw out teachers' positive and negative attitudes towards OER. Each session was designed to elicit an immediate response (within one minute) about their positive/negative views on OER. All participants were given five minutes to write down a statement that began with: "I am positive/negative about OER because ..." While they had sufficient time to articulate their response, only the first minute was recorded in order to gain a snapshot of perceptions about OER.
- To understand teachers' motivations for using OER, interactive question-and-answer sessions were conducted. The questions related to teachers' motivations or demotivations for adapting/contributing to OER, as well as the benefits of OER for the teaching and learning processes. This helped to create an engaging environment for participants to critically question the benefits of OER and surface why OER might be useful for them or not.
- In order to list the barriers to using and sharing educational materials, participants engaged in a snowball exercise, whereby they were given five minutes in which to write down the barriers relevant to their context. In the next stage, participants discussed the common barriers in pairs and then in groups of four, each for about five minutes, to develop consensus on a list of barriers. For logistical reasons, some groups had six members in the third level of the snowball session. The discussions were then shared and captured on a flip chart.
- To assess teachers' perceptions of OER quality, panel discussions were conducted. In each of the workshops, the research team identified four or five participants and asked them to be panellists. This was done the day before so that the panellists had time to prepare and could speak from their personal beliefs and understanding. They were also informed that their positions could be questioned by participants in the audience. During the panel discussion, a moderator (one of the research team members) asked each panellist a set of questions. In these sessions, panellists and other participants discussed issues related to definitions of quality, indicators of quality OER, the need for quality in OER, who should ensure quality in OER and other relevant topics.

Workshops were conducted with lecturers who were recruited with the help of institutional managers. The latter were contacted to assist with identifying educators who might benefit from learning more about OER and who would be willing to participate in the research process. Roughly 30 faculty members attended the workshops at each site; meaning that the survey instrument was distributed to 120 teachers in the four research locations. Managers were also requested to try to achieve equal gender representation in the staff recruited for the workshops. However, the final cohort comprised 38% females and 62% males. Only in one location did female participants outnumber the males.

In addition, the survey was distributed to the members of the WikiEducator India community, which, at the time of research, had 107 members.

The overall sample size for the study was 227 teachers: 120 from the workshops and 107 from WikiEducator India. A total of 149 survey responses was received, of which only 117 (42.7% females and 57.3% males) could be used.

Interviews

The selection of participants for the interviews was done largely on a voluntary basis, and was therefore subject to self-selection bias. The research team also specifically requested some participants to join in the interviews, based on their ability to articulate issues during the workshop. Twenty-eight participants were interviewed in the four workshops. The interview schedule was developed collaboratively with ROER4D researchers from South Africa (Cox & Trotter, 2017). However, the focus of this chapter is on the data collected from the quantitative surveys rather than the qualitative interviews.

Respondent profile

The majority (51.3%) of the 117 respondents in the study were younger than 35 years, while 37.6% were in the 36–50 age group. The number of teachers above the age of 51 was much lower, indicating that most of the teachers in the study were in the mid-career age group. Just over half (57.3%) of the respondents were male, while 42.7% were female. This gender breakdown aligns roughly with the situation at national level – according to the *All India Survey on Higher Education 2014–2015* (MHRD, 2015), about 36% of lecturers in Indian universities are female. Most of the respondents were at the level of assistant professor (60.7%), followed by associate professors (14.5%) and professors (6%). Roughly one-fifth of the respondents (18.8%) indicated that they also performed roles other than teaching, such as academic counsellor, academic administrator, assistant director, etc. These roles were mostly in the distance education institutions, and were considered academic support roles at the level of assistant professor.

Approximately half of the respondents (50.4%) were from Humanities and Social Sciences disciplines, including Education and Law, while 22.2% were from Engineering and Technology, followed by Natural Sciences (17.1%), Management and Commerce (9.4%) and Medicine and Health Sciences (0.9%). The sample therefore had representation from a wide range of disciplines.

In terms of educational qualifications, 54.7% of the respondents held a PhD, while non-PhDs comprised 37.6% and only a marginal percentage (7.7%) held MPhil degrees. Most respondents (41%) had 6–15 years of teaching experience, followed by teachers with 0–5 years (28.2%), 16–25 years (20.5%), 26–35 years (8.5%) and only 1.7% above 35 years. Roughly 70% of respondents had up to 15 years of teaching experience. In terms of modes of teaching undertaken by the respondents, 38% indicated face-to-face teaching, followed by 20% in distance teaching, and 15.8% teaching through a blended/hybrid mode of instruction. Respondents indicated that English was the dominant (97%) language of instruction, followed by Hindi (29.1%). Respondents also indicated that teaching took place in several local languages.

Of the respondents, 44% said that they had used OER prior to the workshop, though most had not known they were OER at the time, while 28% said that they had created OER (these creators were all prior users as well).

Data analysis

Both sets of survey data collected were analysed using descriptive statistics and different statistical tests for quantitative data, and the qualitative data were coded and analysed using Dedoose[7] software. However, in this chapter basic descriptive statistics are presented to provide an overview of the study.

Data sharing

The interview and survey micro data as well as instruments utilised in this study were published on the DataFirst Data Portal[8] after undergoing a multiphased quality assurance and de-identification process. The authors and the ROER4D Curation and Dissemination team checked data files for consistency and correctness, whereafter a de-identification process was undertaken utilising an omission and revision strategy.

The resulting dataset, published under a Creative Commons Attribution ShareAlike (CC BY-SA) licence, is comprised of survey data and 27 interview transcripts shared in CSV, SAS, SPSS, STATA, RTF and XSLX formats, as well as data collection instruments, a dataset description, a project description and a de-identification overview in PDF format.

Findings

In this section, we discuss the survey and interview findings as they pertain to Indian teachers' attitudes towards OER, their motivations regarding using or not using OER, their perceptions of OER quality and their perceived barriers to OER use.

Teachers' attitudes towards OER

Data on respondents' attitudes towards OER were gathered using the questionnaire and analysed as per the ATOER scale categories. Analyses of the overall means and range on the five-point ATOER scale items (1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly agree) indicated that respondents had a positive attitude towards OER (Mean = 4.31, Standard Deviation [SD] = 0.468). Table 1 presents data related to the 13 items in the "Sharing OER" sub-scale.

Table 1: Average of ATOER sub-scale items on "Sharing of OER"

Item statement ("Sharing of OER")	Rank	Range	Min.	Max	Mean		SD
					Statistic	Std error	
It gives me pleasure if someone adopts/adapts my educational resources.	1	3	2	5	4.65	0.04	0.52
Sharing helps me to get feedback.	2	2	3	5	4.58	0.05	0.60

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7   http://dedoose.com/
8   https://www.datafirst.uct.ac.za/dataportal/index.php/catalog/578

Sharing of educational resources improves my professional respect.	3	4	1	5	4.54	0.05	0.62
Sharing enhances my personal and organisational reputation.	4	3	2	5	4.50	0.06	0.66
Sharing enhances my confidence as I see myself as part of a larger community.	5	3	2	5	4.46	0.05	0.58
OER increases my network and sphere of influence.	6	4	1	5	4.42	0.07	0.78
OER improves my chance of recognition at a global level.	7	4	1	5	4.41	0.06	0.74
When others use my OER, it improves my sense of achievement.	8	3	2	5	4.40	0.06	0.73
Sharing of educational resources increases my profile amongst peers and others.	9	3	2	5	4.33	0.07	0.8
OER helps to disseminate my ideas.	10	4	1	5	4.29	0.07	0.77
I believe that sharing educational materials as OER will encourage others to do so as well.	11	3	2	5	4.27	0.07	0.78
OER promotes collaboration and consortia.	12	3	2	5	4.25	0.06	0.72
As a teacher, it is my responsibility to share all educational resources created by me.	13	4	1	5	4.06	0.08	0.97

As the table reveals, the attitude scores ranged from 4.06 to 4.65, indicating that the respondents were largely positive about sharing OER (though it is worth remembering that these positive assertions were made despite most of the university respondents having little awareness of or experience with OER prior to the workshop, making many of their statements hypothetical, reflecting how they *would* feel if they had shared OER). The item with the highest mean score related to the pleasure respondents feel when someone adopts or adapts their educational resources (M = 4.65). This means that these teachers achieve a high level of satisfaction when making a contribution to their peers' educational endeavours, taking joy in knowing that their materials are valuable to others as well. This is a highly personal response, related to the sense of egotistical satisfaction that comes with knowing that others find their work useful (a validation of their materials), as well as to the sense of altruism that comes with knowing that those materials were given away for free (extending it beyond the narrower utility of a particular course).

The second-ranked response was that respondents felt that sharing educational resources helped them obtain feedback (M = 4.58), a valuable outcome if teachers are seeking to improve their materials.

The responses ranked third and fourth were that respondents felt that sharing OER may improve their professional standing (M = 4.54) and enhance their personal and institutional reputation (M = 4.50). This shows that respondents are sensitive to the potential reputational feedback loop of the sharing process.

Such (potential) activities also enhanced their confidence and made them feel like they were part of a larger community (M = 4.46). They reported that sharing OER would increase

their network and sphere of influence (M = 4.42) and bring them recognition at a global level (M = 4.41).

In addition to these top-ranked responses, the teachers also indicated that sharing OER would help them feel a sense of achievement when others used their work (M = 4.40) and that it would help them disseminate their ideas (M = 4.29). They also believed that their sharing behaviour would encourage others to create and share resources as OER (M = 4.27), promoting collaboration and consortia involvement (M = 4.25). Lastly, respondents believed that sharing learning materials is part of their professional responsibility (M = 4.06).

These responses show that respondents felt positively about sharing OER as a (potential) activity. It accorded with their values regarding educational provision and coincided with many of their personal and professional desires.

This enthusiasm was moderated slightly when it came to OER use. An analysis of teachers' attitudes towards adaptation and use of OER (Table 2) shows that the participating teachers had mostly positive attitudes towards adaptation and use of OER – with means ranging from 3.72 to 4.19 – but at a slightly lower level of positivity than OER sharing.

Table 2: Average of ATOER scale items on "Adaptation and use of OER"

Item statement ("Adaptation and use of OER")	Rank	Range	Min.	Max	Mean		SD
					Statistic	Std error	
My own competencies and knowledge of OER help me to participate in or adopt OER.	1	3	2	5	4.19	0.07	0.76
I adopt OER for my teaching as they fulfil the academic requirements of my students.	2	3	2	5	4.12	0.07	0.85
I am efficient in information and communication technologies (ICT) skills needed to adopt and use OER.	3	3	2	5	4.09	0.07	0.85
I have knowledge of intellectual property rights to understand OER.	4	4	1	5	3.72	0.09	0.97

Most respondents indicated that their competencies and knowledge of OER would help them to adopt OER (M = 4.19). Teachers indicated that they use OER in delivering courses to fulfil the academic requirements of their students (M = 4.12). As OER are increasingly digital, ICT skills were considered important in the adoption of OER (M = 4.09). Teachers were not as confident about their knowledge of the intellectual property rights needed to adapt or use OER (M = 3.72).

Statistical tests were applied to gauge whether the distribution of attitude (weighted score) was the same across the "Sharing" and "Adaptation" sub-scales. Respondents were more positive about sharing OER than about adaptation and use. In order to further confirm this difference, the Mann-Whitney U Test was performed to test the hypothesis that the distribution of items was the same across categories in the sample. The result is significant at the 0.05 level (p = 0.045), which confirms that respondents agreed more strongly with sharing than with adapting OER. There was a marginal preference for sharing their own resources rather than using materials created by others.

Overall, higher education teachers in India as sampled in this study held positive attitudes towards OER. They preferred sharing their own educational materials to adapting materials prepared by others. However, the chi-square test revealed that attitudes towards OER were not significantly different between contributors and non-contributors of OER (χ^2 (2, n = 114) = 1.32, p > 0.05). Similar to findings in prior research (CERI/OECD, 2007), teachers in this study indicated that they would share educational materials for the pleasure of sharing. They were also inclined to share in order to improve the reputation of their institutions as well as to build their professional image and reputation (Karunanayaka, 2012). Respondents also felt that sharing is an inherent responsibility of a teacher.

Attitudes on adaptation, however, were not as strong as attitudes towards sharing, which may be due to the fact that most of the respondents (72%) identified themselves as non-contributors of OER.

An issue that emerged from the attitudes analysis was the importance of understanding copyright and open licensing, as noted also in other studies (de Hart, Chetty & Archer, 2015; Pegler, 2012; Reed, 2012). Respondents' adaptation attitudes towards OER may also be influenced by their ability to use ICTs effectively, as revealed in earlier research (Kerres & Heinen, 2015).

Teachers' motivations regarding OER use and contribution

Higher education teachers' motivations to use and contribute OER were studied in order to identify enabling factors that encourage use, reuse, creation, sharing or adaptation of OER. Analyses of the overall mean on motivation items indicate that teachers' responses were inclined towards the positive as they largely agreed to all the items related to motivation to use and contribute OER (M = 3.97, SD = 1.166). Table 3 displays the 19 items against the Likert scale to assess respondents' motivations for using and contributing OER.

Table 3: Motivation to use and contribute OER

Item statement ("Motivation to use and contribute OER")	Rank	Range	Min.	Max	Mean		SD
					Statistic	Std error	
Sharing knowledge is a basic academic value.	1	2.00	3.00	5.00	4.70	0.04	0.49
OER will help developing countries increase access to education.	2	3.00	2.00	5.00	4.55	0.06	0.64
I believe that OER is "good" for people as it improves their learning.	3	2.00	3.00	5.00	4.53	0.05	0.56
OER gives me opportunities to learn new things.	4	3.00	2.00	5.00	4.51	0.06	0.65
OER caters to the innate desire to learn, improve and progress.	5	3.00	2.00	5.00	4.48	0.05	0.63
I like receiving comments and feedback from experts and seniors on OER I have created.	6	3.00	2.00	5.00	4.46	0.06	0.71
OER is less expensive.	7	4.00	1.00	5.00	4.40	0.06	0.72
OER saves me time.	8	3.00	2.00	5.00	4.27	0.075	0.80

I try to contribute to OER to give back to society.	9	3.00	2.00	5.00	4.25	0.06	0.67
OER provides us with opportunities for establishing new partnerships.	9	3.00	2.00	5.00	4.25	0.06	0.74
I like to be involved in peer production of OER.	11	3.00	2.00	5.00	4.22	0.06	0.70
OER improves professional image.	12	3.00	2.00	5.00	4.18	0.06	0.69
OER increases my self-confidence.	13	3.00	2.00	5.00	4.11	0.06	0.72
Technology associated with OER is easy.	14	3.00	2.00	5.00	4.10	0.07	0.78
Through OER, I can reach disadvantaged communities.	15	4.00	1.00	5.00	4.09	0.09	0.99
Involvement in OER will give me recognition.	16	3.00	2.00	5.00	4.05	0.07	0.85
I know about my intellectual property rights under Creative Commons (CC) licences.	17	4.00	1.00	5.00	3.98	0.07	0.83
Receiving appropriate credit will help me uptake OER.	18	4.00	1.00	5.00	3.95	0.09	1.04
OER provides access to the best materials and teachers.	19	4.00	1.00	5.00	3.90	0.08	0.88

While motivation can be categorised in terms of intrinsic and extrinsic factors, the statements in Table 3 can also be grouped according to their thematic principle, in order of importance: social/altruistic, learning, collaboration, cost/time/access, individual benefits, and technology and knowledge.

The most important category of factors for motivating OER use and adaptation is social and altruistic in nature. Thus, teachers asserted that sharing knowledge is a basic academic value (M = 4.70), a proposition that appears to align with the premise behind OER sharing. They strongly agreed that "OER will help developing countries increase access to education" (M = 4.55). Most believed that sharing OER is a way to "give back to society" (M = 4.25) and reach disadvantaged communities (M = 4.09). This was expressed clearly by one workshop respondent, who stated: "I am positive about OER because the poor community of people who don't have resources to afford Engineering or other courses which are of high cost can be benefitted from OER."

The next most important category of factors concerns learning. The top sentiment for respondents was that OER are "good" for people because they improve learning (M = 4.53). This means that they see OER as having a practical benefit for their work ambitions, which include helping students to learn as best they can. Most respondents also believed that OER provided them with opportunities to learn new things themselves (M = 4.51), thereby connecting the learning possibilities between their students and themselves. As one workshop attendee said, OER are "useful for learning, teaching and research purposes in various ways to enrich my knowledge". OER also cater to their innate desire to learn, improve and progress (M = 4.48). In addition, respondents revealed that they liked receiving comments and feedback from experts and seniors on their OER (M = 4.46), further reinforcing the notion that the production of OER allows them to learn and grow along with their students.

The third most important group of factors concerns collaboration. Many respondents believed that OER provides an opportunity to establish partnerships (M = 4.25) and produce materials with peers (M = 4.22). While OER does not require this, it offers opportunities in this regard which many would be keen to take advantage of.

The fourth constellation of factors revolves around cost, time and access. Most felt that OER were less expensive than traditional copyrighted materials (M = 4.40) – a crucial sentiment in resource-poor environments – while many others also thought that it saved them time (M = 4.27). As one workshop attendee said, OER "will enable the faculty to do more research in their discipline and also in ODL [Open Distance Learning] … as they will have more time". They also agreed that OER provided access to the best resources and teachers (M = 3.90), though their response showed a lower level of enthusiasm than for other items in this category. Yet, as one workshop attendee enthused: "[Because of OER], education will become more competitive and hence quality will be enhanced as now the resources will be easily accessible."

The fifth group of factors concerns the individual benefits that might accrue from using or contributing OER. Respondents were relatively positive that OER engagement would improve their professional image (M = 4.18) and even boost their sense of self-confidence (M = 4.11). They were slightly less sure that OER use and adaptation would lead to greater recognition (M = 4.05) or that such credit would lead to greater uptake of OER on their part (M = 3.95). The generally positive responses do, however, suggest that individual benefits remain an important consideration in OER motivation.

The final group of factors involves OER technology and knowledge. A number of respondents believed that the technology associated with OER was easy (M = 4.10), while others also believed that they understood their intellectual property rights under CC licences (M = 3.98), which motivates them to engage with OER.

Analysing respondents' motivations regarding the use and contribution of OER revealed that teachers were highly motivated to use, create and share OER for different academic, professional and personal purposes. They recognised that the workshops organised as part of this research project helped them become aware of how OER could be integrated into their teaching and learning experiences. This resonates with the sentiment expressed by Clements and Pawlowski (2012) that raising awareness could be successful for use and reuse of OER. Awareness and knowledge of OER emerged as a precondition for motivation to share and use OER.

When it comes to what motivates teachers to use and contribute OER, this study identified a variety of enabling factors. These were mostly intrinsic, but several extrinsic motivations appeared to play an important role in promoting the uptake of OER in India, including credit for recruitment and promotion, as well as opportunities for professional development, networking and image building. Many previous studies (Harishankar, 2012; Petrides et al., 2011; Reed, 2012; Rolfe, 2012; Terrasse, Marinova, Greller & Schwertel, 2012; Wang & Noe, 2010) have emphasised that recognition of OER contribution and use could promote OER practices in different contexts.

Perceptions of OER quality

Respondents' perceptions about the quality of OER were assessed by computing statistical measures on 13 Likert-type quality statements collected via the questionnaire and the panel discussion organised during the workshops. Table 4 shows a range of means from 3.49 to 4.46, with an average mean of 3.99 and an SD of 0.78.

Table 4: Perceptions of OER quality

Item statement ("OER and quality")	Rank	Range	Min.	Max	Mean		SD
					Statistic	Std error	
If OER are appropriate in their content I prefer to use them.	1	4.00	1.00	5.00	4.46	.06	0.71
I prefer to use OER from trustworthy sources.	2	3.00	2.00	5.00	4.37	.072	0.78
Open licensing of OER enables continuous quality improvement.	3	4.00	1.00	5.00	4.17	.08	0.89
I use trustworthy OER from reputed institutions.	4	4.00	1.00	5.00	4.09	.09	0.99
I often use OER which fulfil the pedagogical needs of the teaching and learning process.	5	3.00	2.00	5.00	4.07	.07	0.81
OER assists developing countries to have quality materials.	6	4.00	1.00	5.00	4.05	.07	0.81
OER needs localisation.	7	4.00	1.00	5.00	3.97	0.1	1.14
I don't need permission to reuse OER.	8	4.00	1.00	5.00	3.76	0.11	1.19
Lack of peer review of OER makes them susceptible to poor quality.	9	4.00	1.00	5.00	3.74	0.09	1.05
Quality of OER is questionable.	10	4.00	1.00	5.00	3.49	0.1	1.11

Overall analysis indicates that teachers were slightly cautious about OER quality. Respondents typically felt that if OER were appropriate they would use them (M = 4.46). This indicates that respondents use their own criteria for deciding what is appropriate in their context.

They also revealed a keen interest in the trustworthiness of OER sources (M = 4.37), such as those released by a reputable institution (M = 4.09). Without formal quality assurance processes governing the release of many OER, knowing that they come from reputable sources gives teachers greater confidence in them. Respondents also felt that open licensing enabled continuous quality improvement (M = 4.17), since openly licensed resources would potentially be scrutinised – and hopefully improved – by peers who use, adapt and reshare materials openly. In addition, teachers generally agreed that OER were of high quality when they support the pedagogical needs of the teachers and students (M = 4.07). And they agreed that OER would assist developing countries to obtain better-quality materials (M = 4.05), especially if they are localised (M = 3.97).

Respondents were aware that they did not need permission to use OER (M = 3.76), but were mildly concerned that the lack of peer review makes the resources susceptible to poor quality (M = 3.74). The feeling was that any educator can release their teaching

materials openly online, meaning that there is plenty of room for low-quality materials to form part of the corpus of available OER. This may not be the norm, but it is a possibility that these teachers were aware of. Respondents were, however, ambivalent in their perception of whether the quality of existing OER were questionable (M = 3.49), with most expressing a "neutral" viewpoint (which makes sense given many university respondents' lack of prior OER experience before the workshops).

During the panel discussions with respondents, it was revealed that selection of the right kind of OER is important in terms of contextualisation and adaptation so as to be fit for purpose. The real measure of quality material is based on the students' learning needs and how it helps them to learn better. This perception is supported by a study by Nikoi and Armellini (2012), who posited that OER support students' progression. Teachers pointed out that OER should be student-centric and created according to the student learning level and context. The quality assurance process and indicators of quality were debated amongst some of the teachers at two levels, namely quality as end product (e.g. a high-quality textbook or video), and quality as a process (e.g. to take appropriate steps to ensure quality). It was felt that individual efforts, including self-critical evaluation, community participation, peer review and institutional quality assurance policy could positively promote the quality of OER. The discussion further surfaced the idea that the process is more important than the product, as the product can be continuously improved and contextualised due to the utilisation of open licensing.

The literature suggests that reviews by subject experts are useful to ensure quality (Hilton & Wiley, 2009). Clements, Pawlowski and Manouselis (2015) support the importance of collaborative approaches to raise the quality of OER, as was discussed by many teachers in the present study. Knox (2013) indicates that flexibility and relevance to diverse community contexts are important factors in OER quality. Many of the issues identified by the respondents with regard to quality are also covered in the *Quality Assurance Guidelines for Open Educational Resources: TIPS Framework* (Kawachi, 2014). However, the workshop participants in this study emphasised appropriateness of OER ("fit for purpose") as the foremost criterion for assessing the quality of OER, as was found in the study by Wild (2012). The trustworthiness of the source and the reputation of the organisation responsible for the OER have also been identified as quality issues (Clements & Pawlowski, 2012; Conrad, Mackintosh, McGreal, Murphy & Witthaus, 2013). The suitability of OER for teaching and learning needs (i.e. pedagogical purposes) was identified as another quality issue.

In this study teachers agreed that accountability in terms of the quality of OER rested equally with authors, editors and the institutions hosting or sharing these resources. This accords with Musunuru's (2012) study, which highlights the importance of institutional efforts to assure the quality of learning materials. While the findings of this study are consistent with existing literature with regard to perceptions around resource quality, it was also found that the perception of quality is related to whether or not an individual contributes OER. While teachers are concerned with quality and make every effort to improve their resources, those who contribute OER appear to be less fixated with quality as a factor. Those who have never contributed OER were more sceptical about the quality of OER.

Barriers to OER adoption

While the respondents in this study had a relatively positive attitude and appeared intrinsically motivated to use and adapt OER, this does not appear sufficient for mainstreaming OER in Indian HEIs, as they also indicated several barriers. The questionnaire listed 18 barriers that may affect use and contribution of OER by individual teachers in institutions. These barriers were personal, institutional, technical, legal, economic, linguistic and pedagogical, as shown in Table 5.

Table 5: **Analysis and ranking of barriers to OER adoption (listed in order of weighted rank)**

Barriers	Choices					Cumulative			Weighted	
	1	2	3	4	5	Score	Rank	%	Score	Rank
Lack of understanding of intellectual property, copyright and CC licensing. (Legal)	23	11	7	6	8	55	1	47.00	200	1
Current workload. (Personal)	20	13	6	5	7	51	2	43.59	187	2
Lack of recognition and reward systems for developing OER. (Institutional)	9	6	13	7	12	47	3	40.17	134	3
Lack of technological support to resolve problems. (Technical)	7	9	3	13	6	38	4	32.48	112	4
Lack of financial resources by institution to invest in OER. (Economic)	1	10	10	10	4	35	5	29.91	99	5
Lack of time. (Personal)	6	7	7	6	5	31	7	26.50	96	6
Lack of knowledge for using OER in teaching and learning process. (Pedagogical)	7	8	3	7	5	30	8	25.64	95	7
Inability to find existing OER on topics of interest. (Personal)	7	6	7	4	4	28	10	23.93	92	8
Lack of institutional policy on OER. (Legal)	3	6	9	8	7	33	6	28.21	89	9
Poor technical infrastructure. (Technical)	4	5	7	7	6	29	9	24.79	81	10
Difficulty to remix OER for specific users. (Pedagogical)	6	6	2	6	4	24	11	20.51	76	11
Lack of ICT skills required to create OER. (Technical)	4	3	7	4	4	22	12	18.80	65	12
Incompatibility of OER with my university learning management system. (Technical)	3	3	4	4	3	17	14	14.53	50	13
Unavailability of OER in native language. (Linguistic)	3	4	1	2	9	19	13	16.24	47	14
Difficulty in collaboration. (Pedagogical)	3	1	5	5	3	17	14	14.53	47	14
Inadequate bandwidth. (Technical)	1	4	4	3	4	16	15	13.68	43	15

Lack of confidence about the quality of own work. (Personal)	1	3	5	3	4	16	15	13.68	42	16
Non-user-friendly OER platforms. (Technical)	1	3	4	4	2	14	16	11.97	39	17
Other	0	1	0	0	1	2	17	1.71	5	18

Table 5 shows that the most important barrier to OER adoption, according to these respondents, is their lack of understanding of intellectual property, copyright and open licensing, the legal permissions issues surrounding OER. Mtebe and Raisamo (2014a) and Harishankar (2013) also showed that a functional understanding of CC licensing was a concern for some faculty members in terms of OER uptake.

The second highest ranked barrier to OER uptake for these respondents was their workload. They saw OER as additional work, and therefore saw current workload as a barrier to doing any additional work developing OER. In terms of high current workload and time constraints, Harishankar (2013) also found that teachers were not able to contribute due to higher work pressure. Other studies also indicated lack of time to find suitable materials as a barrier[9] (see, for example, Clements & Pawlowski, 2012; Coughlan, Pitt & McAndrew, 2013; de Hart et al., 2015; Harishankar, 2013; Hilton & Wiley, 2009; Mtebe & Raisamo, 2014b; Ossiannilsson & Creelman, 2011; Prasad & Usagawa, 2014; Prior, 2011; Rolfe, 2012).

The third most cited barrier pertains to recognition and reward. This has been cited in previous studies, such as Glennie, Harley, Butcher and van Wyk (2012), Hilton and Wiley (2009), Hylén (2006) and Rolfe (2012). While teachers seemed to be intrinsically motivated, the barriers identified indicate that their use of and contribution to OER might increase if they understood OER better, had more time to work on producing OER and received recognition for this work.

The fourth and fifth barriers identified are institutional, and relate to lack of funding and the need for increased technological support. Institutional barriers such as lack of technical support, lack of OER policy, internet bandwidth issues, as well as inadequate infrastructure in terms of labs, computers (shared or individual) and other required equipment (such as audio-video recording devices) have also been reported as barriers to OER adoption (see, for example, Coughlan et al., 2013; de Hart et al., 2015; Dhanarajan & Porter, 2013; Hylén, 2006; Mtebe & Raisamo, 2014a; 2014b).

While some respondents saw pedagogical issues and institutional policy as barriers, these were not the predominant factors identified. The other barriers mentioned by teachers related to the perceived low quality of OER and an overall lack of awareness.

Discussion

This study of higher education teachers at four institutions and the WikiEducator community in India reveals an overall positive attitude towards the uptake of OER, especially the sharing of such materials. Findings indicate that many teachers in the study sites have been using OER, whether knowingly or unknowingly, though OER adaptation activity is very limited. While

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the analysis presented thus far has focused on distinguishing the teachers' understandings of their attitudes, motivations and perceptions of quality and barriers concerning OER, we now assess those understandings based on the factors and sub-factors that emerged in the Findings discussion. These broad thematic factors are personal, institutional, economic and pedagogical. By assembling the survey results into these categories, the four research questions can be addressed in a much more nuanced way, as they allow us to compare responses across the survey elements – attitudes, motivations, quality, barriers – together.

Personal factors

A number of factors that influence teachers' perception of and engagement with OER can be described as personal, such as those relating to pleasure or satisfaction, self-development, reputation, collaboration, altruism, awareness, digital fluency and workload. Table 6 groups all the survey statements and results (drawing on Tables 1, 3, 4 and 5) regarding these personal factors in order to enable quick comparison of which elements are the most important, and how various responses in one category (attitudes, motivations, etc.) nuance the responses in other categories. Table 6 deals with personal factors as they relate to OER sharing or contributing.

Table 6: Comparison of personal factors as they relate to key survey categories regarding OER sharing (listed in order of importance according to the "Attitude" category)

Factors	Attitudes	Motivations	Quality	Barriers
Pleasure/ achievement/ self-satisfaction	Teachers experience pleasure if someone adopts/adapts their educational resources. When others use teachers' OER, it improves their sense of achievement.			Lack of confidence about the quality of own work.
Self-development	Teachers believe that sharing helps them obtain feedback.	OER gives them opportunities to learn new things. They like receiving comments and feedback from experts and seniors on OER created. OER increases their self-confidence.		
Reputation	Teachers believe that sharing educational resources: – Improves their professional respect. – Enhances their personal and organisational reputation. – Increases their network and sphere of influence. – Improves their chances of recognition at a global level. – Increases their profile amongst peers and others. – Helps to disseminate their ideas.	OER improves professional image. Involvement in OER will give me recognition.		

Collaboration/ community participation	Teachers believe that sharing educational resources: – Enhances their confidence as they perceive themselves as part of larger community. – Promotes collaboration and engagement with consortia.	OER provides us with opportunities for establishing new partnerships. I like to be involved in peer production of OER.		Difficulty in collaboration.
Altruism	Teachers believe that sharing educational materials as OER: – Will encourage others to do so as well. – Is their responsibility.	Teachers believe that: – Sharing knowledge is a basic academic value. – OER will help developing countries increase access to education. – By contributing, they give back to society. – Through OER, they can reach disadvantaged communities.	OER assist developing countries to access quality materials.	

Pleasure and achievement

As Table 6 shows, in terms of the teachers' personal attitudes towards sharing OER, they expressed a high level of satisfaction in knowing that others are using and adapting their materials. Through this action of giving, they have made a contribution to the work of their peers – and their students – thus they feel pleasure at this outcome. This coincides with their deeper educational values, and respondents indicated that they gained a sense of achievement from sharing OER.

Self-development

While these attitudes support their interest in OER sharing, it is the prospect of learning new things and obtaining feedback from experts in their fields that motivates them to engage in OER activity.

Reputation

In terms of personal reputation, teachers believe quite strongly that sharing educational materials improves their professional reputation, enhances their personal and organisational reputation, increases their network and sphere of influence, improves their chances of recognition at a global level, increases their profile amongst peers and helps to disseminate their ideas more broadly. Yet, when it comes to their actual motivations for sharing OER based on this "reputation" sub-factor, they ranked statements such as "OER improves professional image" and "Involvement in OER will give me recognition" far lower than they did others. Thus, similar to the "pleasure and achievement" sub-factor, there appears to be an interesting mismatch between the attitudes that teachers have towards sub-factors like reputation enhancement and how they believe these act as a motivation for OER activity.

Collaboration

Teachers show a solid level of positivity in sharing educational resources, which enhances their confidence as they perceive themselves to be part of a larger community. They feel that collaboration provides them with opportunities for establishing new partnerships. They ranked this at similar levels in their attitudes and in their motivations.

Altruism

Even though teachers ranked altruism statements comparatively low in terms of their attitudes (but reasonably high in absolute terms), they were the top-ranked reasons in their motivations. Teachers revealed strongly altruistic reasons for sharing OER as they believe that sharing knowledge is a basic academic value. They thus have a responsibility to share so that developing countries and disadvantaged communities will be able to increase their access to quality educational materials. They believe that by contributing OER they give back to society, and, in doing so, encourage others to also share. Table 7 deals with personal factors as they relate to OER use (drawing on Tables 2, 3, 4 and 5).

Table 7: **Comparison of personal factors as they relate to key survey categories regarding OER use (listed in order of importance according to the "Attitude" category)**

Factors	Attitudes	Motivations	Quality	Barriers
Digital fluency	Teachers are relatively confident about their competencies and knowledge to assist them to use or contribute OER. Teachers are confident in their use of ICT to use or adapt OER.	Technology associated with OER is easy.		Lack of ICT skills required to create OER.
Awareness of OER licensing	Teachers are not as confident about the knowledge of intellectual property rights needed to adapt or use OER.	I know about my intellectual property rights under CC licences.	Open licensing of OER enables continuous quality improvement. I don't need permission to reuse OER.	Lack of understanding of intellectual property, copyright and CC licensing.
Workload		OER saves me time.		Current workload. Lack of time.

Digital proficiency

Teachers acknowledge that they are quite confident in their use of ICT to use or adapt OER. Most consider the use of technology associated with OER as "easy" and not a barrier to the creation of OER.

Awareness of open licensing

Teachers list their prime barrier to OER adoption as their lack of understanding of intellectual property, copyright and CC licensing. Even though they appreciate that the open licensing of OER enables continuous quality improvement, they are slightly less confident about their competencies and the knowledge required to assess licensing provisions in terms of using or adapting OER.

Workload

While acknowledging that OER may save them time, two key barriers faced by teachers are current workload and lack of time.

Institutional factors

A number of factors outside of the personal also influence OER engagement, such as institutional factors. Because these are not personal, they have less relevance to attitude and relate more to the other categories of motivation, quality and barriers. As shown in Table 8 (drawing on Tables 3, 4 and 5), these include reward structures, levels of technical support, policy instruments and the reputation or quality of OER.

Table 8: **Comparison of institutional factors as they relate to key survey categories (listed in order of importance according to the "Barriers" category)**

Factors	Motivations	Quality	Barriers
Reward structures	Receiving appropriate credit will help them adopt OER.		Lack of recognition and reward systems for developing OER.
Technical support			Lack of technological support to resolve problems. Poor technical infrastructure. Incompatibility of OER with university learning management system. Inadequate bandwidth. Non-user-friendly OER platforms.
Policy			Lack of institutional policy on OER.
Reputation/quality assurance		They preferred to use OER from trustworthy sources. They use trustworthy OER from reputed institutions. Lack of peer review of OER makes them susceptible to poor quality. Quality of OER is questionable.	

Reward structures

Teachers concede that receiving appropriate credit would assist them to adopt OER. They ranked quite highly the current lack of recognition and reward systems for developing OER as one of the impediments to OER adoption. The need for institutional support in terms of any kind of appraisal, reward and recognition concurs with that of prior studies (Glennie et al., 2012).

Technical support

Though technical issues were not mentioned as motivators to create or use OER, teachers noted the lack of technical support to resolve problems and, to a lesser extent, the poor technical infrastructure, incompatibility of OER with their university learning management system, inadequate bandwidth or non-user-friendly OER platforms.

Policy

In the one instance that institutional policy was raised in the survey, the teachers ranked the lack of an institutional policy on OER as a modest barrier, a point that has been highlighted in other studies (Davis et al., 2010; Rolfe, 2012).

Reputation and quality of OER

Throughout the workshops and in the survey, teachers revealed that they had some concerns about OER quality, but usually stated that they preferred to use OER from "trustworthy sources" and "reputed institutions". They marginally agreed that the lack of peer review of OER made them susceptible to poor quality.

Economic factors

Another key factor that is worth distinguishing from the personal and institutional concerns is the economic aspects, as shown in Table 9 (drawing on Tables 3 and 5).

Table 9: **Comparison of economic factors as they relate to key survey categories**

Factor	Motivation	Barrier
Economic	OER is less expensive.	Lack of financial resources by institution to invest in OER.

Although teachers considered OER to be less expensive than traditional course materials, they point to the lack of financial investment in OER at the institutional level as a barrier.

Pedagogical factors

The last factor treated here is a pedagogical one, as shown in Table 10. (drawing on Tables 2, 3, 4 and 5).

Table 10: **Comparison of pedagogical factors as they relate to key survey categories regarding OER use**

Factor	Attitude	Motivation	Quality	Barriers
Pedagogical	Teachers use OER to fulfil the academic requirements of their students.	They believe that OER are "good" for people as they improve their learning. OER caters to the innate desire to learn, improve and progress. OER provides access to best materials and teachers.	If OER are appropriate in their content I prefer to use them. I often use OER which fulfil the pedagogical need of the teaching and learning process. OER needs localisation.	Lack of knowledge for using OER in teaching and learning process. Inability to find existing OER on topics of interest. Difficulty to remix OER for specific users. Unavailability of OER in native language.

Although many teachers believe that OER are valuable because they afford opportunities to learn, improve and progress, teachers make the choice about OER based on their appropriateness for their students' and their own needs. Appropriateness as a measure of

quality of educational materials has been identified by Dhanarajan and Timmers (1992), Wild (2012), as well as Brent et al. (2012). Not all are convinced that OER provides access to the "best" materials, and some recognise that OER may require localisation. Many teachers admit to lacking knowledge of how to use OER in the teaching and learning process, their inability to find existing OER on topics of interest, their difficulty in remixing OER for specific users, and, to a lesser degree, the unavailability of OER in local languages. Teachers generally prefer to use OER from trustworthy sources or reputable institutions. While they acknowledge that the lack of peer review of OER may make them susceptible to poor quality, this does not seem to cast the overall quality of OER into question.

Synthesised answers to the research questions

This study set out to answer four research questions concerning Indian teachers' attitudes, motivations, perceptions of quality and barriers to OER use and adaptation. To answer these questions, the Findings section of this chapter approached the questions according to certain prime categories (attitudes, motivations, perceptions of quality and barriers), revealing how teachers responded to the various survey prompts under each category. In this section, those findings were further nuanced by analysing the otherwise categorically based responses according to various factors (personal, institutional, economic, pedagogical). With the results from these varied approaches in mind, we can now offer distilled answers to the four research questions.

(1) How are teachers' attitudes towards OER situated in the context of teaching and learning?
Despite the relatively low levels of awareness that teachers had of OER prior to the workshop, after they learned more about them and their potential in their own work, they were highly positive about creating and sharing OER, while being slightly less enthusiastic about using externally sourced materials. Many of these positive attitudes stemmed from – in order of importance – the sense of satisfaction obtained when others use and adapt their teaching materials, the useful feedback received from their peers, the reputational boost provided as a result of sharing, the chance to take advantage of collaborative opportunities opened up by sharing, and the belief that their own sharing will encourage others to do the same. Most felt they have the necessary digital proficiency to use OER and they also saw how OER could help meet their students' needs, but they did not feel confident about the knowledge of intellectual property rights or CC licensing needed to adapt or use OER. Despite this one area of concern, the teachers' largely positive attitudes to OER sharing – and, to a slightly lesser extent, OER use – offer a solid platform for building greater OER awareness and encouraging greater OER engagement in the Indian higher education sector.

(2) What are teachers' motivations for using OER and sharing their work as OER?
The motivations that Indian teachers expressed for using and sharing OER fall into a series of categories, which, in order of importance, include: social/altruistic, learning, collaboration, cost/time/access, individual benefits, and technology and knowledge.

First, the most important motivational category is social and altruistic. Teachers asserted that sharing knowledge is a basic academic value, that "OER will help developing countries

increase access to education", and that sharing OER is a way to "give back to society" and reach disadvantaged communities.

Second, teachers said that OER is "good" for people as it improves their learning. Many also believed that OER provided them with opportunities to learn new things themselves, and it catered to their innate desire to learn, improve and progress. In addition, they said they like receiving comments and feedback from experts and senior colleagues on their OER work.

Third, regarding cost, time and access, many respondents believed that OER provides an opportunity to collaborate and produce materials with peers.

Fourth, most felt that OER was less expensive than traditional copyrighted materials, while many others also thought that it saved them time. They also mildly agreed that OER provided access to the best resources and teachers.

Fifth, regarding individual benefits that might accrue from using or contributing OER, teachers said that they were relatively positive that OER engagement would improve their professional image and even boost their sense of self-confidence. They were slightly less sure that OER use and adaptation would lead to greater recognition for them or that such credit would lead to greater OER uptake on their part.

Sixth, some respondents believed that the technology associated with OER was easy, while fewer believed that they understood their intellectual property rights in terms of CC licensing.

Thus, while teachers are motivated by a number of factors to share or use OER, the ones that they say are the most essential for them revolve around the social and altruistic contribution to others and learning new things themselves.

(3) How do teachers perceive the quality of OER?

Overall analysis indicates that teachers were slightly cautious about OER quality. Respondents typically felt that if OER were appropriate they would use them. This indicates that respondents use their own criteria for deciding what is appropriate in their context. They also revealed a keen interest in the trustworthiness of the sources of OER, such as those released by a reputed institution. Respondents also felt that open licensing enabled continuous quality improvement since they would potentially be scrutinised by peers who use, adapt and reshare materials openly. In addition, teachers generally agreed that OER are of high quality when they support the pedagogical needs of the teachers and students. They agreed that OER would assist developing countries to obtain better-quality materials, especially if they are localised.

Respondents were mildly concerned about the lack of peer review, which they feel makes the resources susceptible to poor quality. Nevertheless, during the workshop panel discussions, respondents said that the real measure of quality material is based on the students' learning needs and how it helps them to learn better. Teachers agreed that accountability in terms of the quality of OER rested equally with authors, editors and the institutions hosting or sharing these resources.

(4) What barriers to using OER do teachers perceive?

Respondents ranked a number of potential barriers to OER use and sharing, with their lack of understanding of intellectual property, copyright and open licensing being listed as

the primary barrier. Second was the issue of the very heavy workloads experienced at their institutions. They saw OER as additional work, and therefore saw current workloads as a barrier to doing any additional work developing OER.

The third most cited barrier pertains to recognition and reward. While teachers seemed to be intrinsically motivated, the barriers identified indicate that teachers' use of and contribution to OER might increase if they understood OER better, had more time to work on producing OER and received recognition for this work.

The fourth and fifth barriers identified are institutional, and relate to lack of funding and the need for increased technological support. While some respondents also saw pedagogical issues and institutional policy as barriers, these were not the predominant factors identified. The other barriers mentioned by teachers related to the perceived low quality of OER and a lack of awareness thereof.

Conclusion and recommendations

This research indicates that most respondents feel positive about the prospects of creating OER, as well as using them. The creation and use of OER aligns with respondents' educational philosophies and professional desires, as they see the utility that OER can have for them in teaching their students, in improving their own materials (through the use of others' materials and from feedback given on their own OER), and in satisfying their wishes to help other educators with their work. The fact that the attitudes and motivations towards OER expressed were largely hypothetical, in that most respondents were revealing their feelings about situations that they had yet to personally experience, suggests that the educators do not lack the requisite feelings or motivations for engaging with OER, but that in the past they – probably like most Indian educators – lacked the awareness of OER needed to be able to act on it.

This is the first challenge for increasing OER creation and use in Indian higher education: to enhance the levels of awareness that educators have of OER so that they can act on their largely positive attitudes and motivations towards them.
Recommendation 1 is that advocacy for and awareness of OER (including open licensing) in Indian universities should be a top priority, with a particular focus on teachers and senior administrators.

The second challenge identified is that, while educators are largely positive about OER, they often lack the time to engage with OER development activities, which might entail specialised training and support, and may initially be more time consuming than their conventional educational materials development activities.
Recommendation 2 is that teachers should be released from certain duties and provided with the time required to engage in OER activity.

In addition, given the temporal constraints and demands on most educators in India's higher education system, respondents suggested that the fact that there are no rewards or recognition given for OER engagement is a barrier to OER activity. There is no signal from

their institutions that OER activity is valued by the institution, thus reducing the likelihood of their engagement with OER.

Recommendation 3 is that incentives in the form of awards and/or recognition in promotion should be provided for teachers to undertake OER work.

For the uptake of OER in Indian HEIs to be promoted in a sustainable manner, a comprehensive strategy at the institutional level would be useful. At the national level, the Ministry of Human Resource and Development has adopted an open licensing policy for its flagship NMEICT project that supports content development in different subjects in higher education. However, because this is a project, its impact may be limited in terms of institutionalising OER in Indian universities. At the time of the study, only three Indian universities had an OER policy, but there was no visible OER activity in these institutions due to lack of clarity in the policies. Having appropriate policy is therefore important but not sufficient. If OER is to be mainstreamed in Indian higher education, it is important to develop an action plan with adequate funding, institutional support and policy development. *Recommendation 4 is that institutional OER policy should be developed and implemented to foster OER use.*

With such recommended approaches in place, educators and institutions could shift their focus to address the more particular challenges surrounding OER, especially the need for them to be of the requisite quality and relevance. Because OER are typically not peer reviewed or quality assured by external organisations – though some are – such mechanisms could be implemented at either the institutional level (especially for the creation of OER by institutional educators) or the national level (especially for identifying high-quality OER that can be used by Indian educators). This would likely require some experimentation before arriving at a suitable and sustainable approach.

Recommendation 5 is that quality assurance mechanisms for OER produced should be developed.

Lastly, the use and creation of OER rely on a new and slightly specialised set of skills with which educators should receive continuous support, particularly at the institutional (or multi-institutional) level. This approach acknowledges that educational material development activities are always changing, responding to new needs, and that OER needs to be incorporated into the continuous development strategies that institutions develop for their educators.

Recommendation 6 is that continuous professional development opportunities should be provided to teachers through regular workshops and training sessions on advanced ICT and OER skills (finding, evaluating and remixing).

Despite the overwhelmingly positive response to OER from teachers across the study sites, the research team experienced some opposition to OER from the perspective of fostering innovation and the protection of intellectual property rights. These concerns were typically expressed by senior university managers who operated in a paradigm driven by patents and the monetisation of innovation. There was, however, a movement amongst teachers interested in supporting OER who were seeking advice and support from their institutions.

Access to knowledge resources and technology has broadened the perspectives of the teachers who participated in this study, though some concerns remain in terms of quality and, to some extent, the "not invented here" syndrome.

The results of this study can only be treated as indicative of some Indian higher education teachers' current attitudes, motivations, perceptions of quality and barriers to OER at the study sites, as the sample size is too small for a country with a large population of teachers and over 700 universities. The study can, however, be replicated in different institutions to understand the psychological determinants of teachers in those contexts. Institutions can devise better mechanisms to address barriers, motivating factors and issues of quality when they better understand their teachers' current thinking and attitudes. This would drive a more data-oriented approach towards the development of appropriate advocacy, policies and training strategies. In terms of taking the OER movement forward in India, it is important to foster a community of practice of higher education teachers interested in OER to collaborate and develop courses. While there has been substantial investment in content development through the NMEICT project, it is important to create a community of practice to revise and update locally developed online resources as part of the ongoing work of teachers and not to consistently look to central government for funding support.

These perceptions around barriers to OER uptake indicate that there is a need for training and capacity-building in order to help teachers understand the principles of OER, copyright and open licensing. Developing appropriate policy to govern the sharing of educational materials and providing technical facilities within institutions would also create enabling conditions to promote OER adoption. Providing incentives in the form of formal recognition and reward may also boost OER uptake, though it appeared that most of the teachers were intrinsically motivated of their own accord (Mishra, 2016).

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