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Library Resources and Research Environment in Higher Education Institutions: Students' Satisfaction

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Library Resources and Research Environment in Higher Education Institutions: Students' Satisfaction

Abstract

This study aims to examine library resources and research environment in higher education institutions in terms of students' satisfaction. The library in university has a central role in higher education in multiple ways. As the online web of knowledge is providing free of cost. However, the similar nature of services is subscribed and paid at student homes. For the present research, a quantitative study design was opted to conduct an online survey. A total of 1358 students participated from public and private sector universities to fill the questionnaire. The questionnaire was pre-tested from 30 respondents. Structural Equation Modelling (SEM) technique was employed to measure the effects of the proposed model. The study findings show that the students are provided with all the necessary facilities to search the information and sort-out the updated knowledge on the topics of their interest. Moreover, the students are getting benefits from all the online and print sources to meet the demands of the research in the present era. It is also revealed that research-intensive students are satisfied with available library resources. The study recommended that students should be facilitated by providing updated digital and print resources to keep up to date students with the latest knowledge produced in their relevant fields.

Keywords: Print and Digital Resources, Facilities, Study Environment, Literature, Students' Satisfaction

Introduction

The present millennium for students of the universities has been conventionally costumed to study and search for information (Adriani, Kipnis, Kolbin, & Verbit, 2020; Appleton, 2020; Arthur, 2020). Similarly, students find references rather than visit the library physically as compared to the previous generation (Asamoah, 2020; Auten, Croxton, & Tingelstad, 2020). As in the past, students spend considerable time in the library to study books and articles to find the proper references (Azonobi, Uwaifo, & Tella, 2020; Baada, Ayoung, Bekoe, & Azindow, 2020). As a heap of research work revealed that the roles of physically visiting for library facility as a more compilation pint to read and reference material have threats from the available online, free and high-speed searching engine (Bock, Dilmetz, Selznick, Zhang, & Mayhew, 2020; Channa, Manan, & David, 2020). Similarly, the library in any university has a central role in higher education in multiple ways (Chidi Nuel-Jean & Okoye, 2020; Chikazhe, Makanyeza, & Kakava, 2020). As the

online web of knowledge is providing free of cost (Copeland, Yoon, & Zhang, 2020). However, the similar nature of services is subscribed and paid at student homes (Damerchiloo et al., 2020). Thus, online libraries are the major source for the students (Dollinger & Vanderlelie, 2020). Moreover, scholars have to seek new studies, sort out updated researches, and references for their use (Encheva, Tammara, & Kumanova, 2020; Farhan & Razmak, 2020). In the past, although the traditional model of research was used (Gamble, Worth, Gilroy, & Newbold, 2020). Thus, the students used to spend hours studying the topics of their interest and references (Gould & Brett, 2020). Contrary to it, it has been unburdened due to the use of modern technology and communication (Gunapala, Montague, Reynolds, & Vo-Tran, 2020). It has obviously, reduced the human effort through the software and digital resources (Habiba & Ahmed, 2020; Hamad, Fakhuri, & Abdel Jabbar, 2020). Currently, students used to spend days for search and references that are now carried out in hours and even in minutes (Hardy & McKenzie, 2020; Harlow & Hill, 2020). It is pertinent to mentioned here that literature search facilities are the well-organized and systematic search from the already existing published data to identify a quality references on the subject under hand (Appleton, 2020). Moreover, it is very important tool such as Wildcards, Proximity, Truncation, and phrase search. Likewise, digital resources provide the information in terms of electronic format other than print materials (Odunola & Tella, 2020). Moreover, it enhance search of electronic collections that is distributed across the network. By the same token, the online resources are the material found online sources such as interment, web and electronic as well. It is an online magazines, journals, blogs, webpages and forums (Harlow & Hill, 2020).

Main Objective of the Study

The main objective of the study is to examine library resources and research environment in higher education institutions in terms of students' satisfaction.

Review of Literature

A substantial body of literature revealed the awareness level of students and scholars about the modern means of information resources the world over (Auten et al., 2020; Baada et al., 2020; Harlow & Hill, 2020; Kane & Mahoney, 2020; Pacios & Serna, 2020). Previously, few research studies have reported the awareness and satisfaction of the scholars and students about the electronic information resources and services provided on campus through digital libraries (Lantzy, Matlin, & Opdahl, 2020; Litsey, Allen, Cassidy, DeVet, & McEniry, 2020; Marks, 2020; Saragossi, Stevens, Scheinfeld, & Koos, 2020). Hardy and McKenzie (2020) unveiled surprisingly

that the students and scholars significantly lack the awareness level about the digital information resource system in most of the parts of the world. However, Soroya and Ameen (2020) revealed the awareness level and satisfaction to the modern information resources and services vary from region to region. As the awareness level in developed countries has been found pretty satisfactory (Cole & Stenström, 2020). However, unsatisfactory due to the lack of modern information resources in developing countries (Chidi Nuel-Jean & Okoye, 2020). Similarly, the access of the students and scholars to the digital resources [modern information resources and services] also vary as elaborated by Baada et al. (2020). They asserted that students and scholars still use the traditional methods of getting information through libraries through print resources, in different African and Asian countries. Moreover, similar findings have been reported by Farhan and Razmak (2020) endorsing the lack of access to modern means of information resources and services. Likewise, scholars and students were not provided a sophisticated environment within the universities coupled with the lack of staff and modern facilities as compared to the scholars (Kane & Mahoney, 2020). Furthermore, students from the developed countries enjoying the digital libraries and classy environment with all the facilities (Pacios & Serna, 2020).

Soroya and Ameen (2020) argued that a visible change has been reported for the last few decades in developing countries. They highlighted that the governments in general and universities, in particular, have taken initiatives to furnish the modern sources of information. Similarly, services for the scholars and students on campus through digital libraries were providing all sorts of modern facilities i.e., computers, high-speed internet, and free databases. In most of the Asian countries except a few, modern resources of information are established in higher education institutions (HEIs) [universities] (Momunalieva, Urdaletova, Ismailova, & Abdykeev, 2020). Moreover, the students are provided digital library sources to get benefitted the modern means of information (Soroya & Ameen, 2020). Similarly, a well-equipped environment has been provided with all the modern services to scholars to learn about the latest research across the world (Habiba & Ahmed, 2020).

Hardy and McKenzie (2020) argued although modern means of information resources along with staff and are provided in the digital libraries in developing countries. However, the universities are trying to enhance the standards of libraries as set by the developed countries because most of the resources are still not accessed by scholars. Channa et al. (2020) argued that the situation in

Pakistan is similar to the other developing countries, particularly in the Asian region. It has been observed that digital libraries are established in almost every university however the facilities vary from institution to institution. For example, a research-intensive university has a more sophisticated environment and possess modern sources of information (Chikazhe et al., 2020; Copeland et al., 2020) while the others are less likely in resources that ultimately affect the performance of the students (Rodriguez, 2020). Moreover, the satisfaction of the scholars is according to the available resources and environment (Gould & Brett, 2020). Appleton (2020) describes that the libraries are established with modern resources like a good environment, internet facilities, staff, print resources, and computer labs but access to different databases is limited in Pakistan (Channa et al., 2020). It is also found that the satisfaction level of students and scholars vary according to the university (Momunaliyeva et al., 2020; Soroya & Ameen, 2020) and the available modern resources of information and access to the information coupled with the environment provided within the library (Soroya & Ameen, 2020). It is pertinent to mention here that the satisfaction level of students in the libraries of Pakistan has never been the subject of interest of the researchers (Channa et al., 2020; Momunaliyeva et al., 2020). It is pertinent to mention here that the satisfaction level of students in the libraries of Pakistan has never been the subject of interest of the researchers (Channa et al., 2020; Momunaliyeva et al., 2020). Thus, we intend to examine university library resources and students' satisfaction in Pakistan.

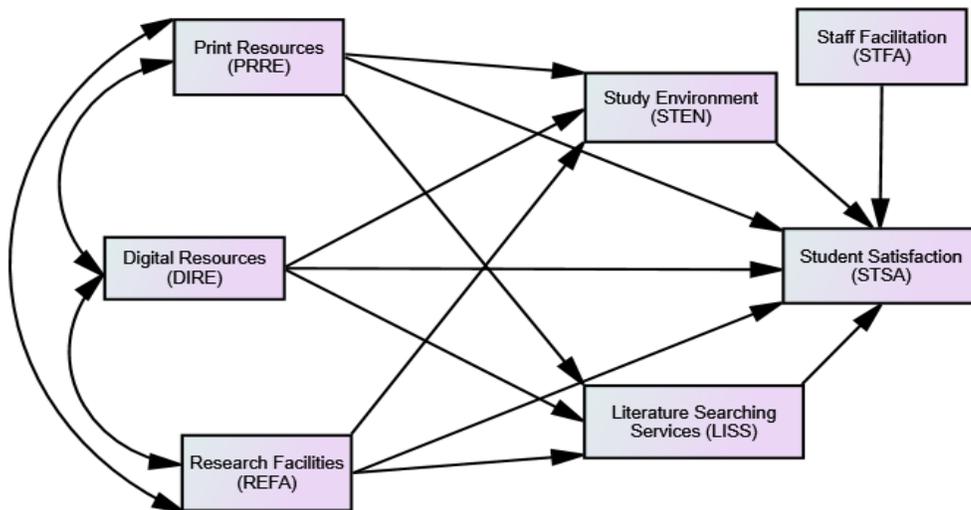


Figure 1: Conceptual Framework

Based on this model, ten hypotheses are developed having direct and indirect effects of the model and presented in the section of results and discussion.

Hypothesis 1: Research facilities, digital resources, and print resources had direct effects on the study environment in the universities.

Hypothesis 2: Print resources, digital resources, and research facilities had direct effects on literature searching services in the universities.

Hypothesis 3: Literature searching services, print resources, and research facilities had direct effects on students; satisfaction in the universities.

Hypothesis 4: Digital resources, staff facilitation, and study environment had direct effects on students' satisfaction in the universities.

Hypothesis 5: Digital resources had an indirect effect on students' satisfaction through the mediation of literature searching services in the universities.

Hypothesis 6: Digital resources had an indirect effect on students' satisfaction through the mediation of the study environment in the universities.

Hypothesis 7: Print resources had an indirect effect on students' satisfaction through the mediation of literature searching services in the universities.

Hypothesis 8: Print resources had an indirect effect on students' satisfaction through the mediation of the study environment in the universities.

Hypothesis 9: Research facilities had an indirect effect on students' satisfaction through the mediation of literature searching services in the universities.

Hypothesis 10: Research facilities had an indirect effect on students' satisfaction through the mediation of the study environment in the universities.

Materials and Methods

For the present research, a quantitative study design was opted to conduct an online survey. The purpose was to examine universities' library resources and students' satisfaction in Pakistan. A total of 1358 students participated and filled the questionnaire. The inclusion criteria to participate was based as an enrolled student of public and private sector university, passed at least one semester of BS (4 years) and MA/MSc (2 years) programme in Pakistan, using library resources, and male & female. In addition to this, the consent form and purpose of this study were also online on the first page of the questionnaire. A well-structured questionnaire was administered and pre-tested from 30 respondents. The study used exogenous and endogenous variables. The results of

pre-testing showed the significance of Alpha value ranging from .723 to .896 and overall was .921. This questionnaire consisted of different sections as mentioned in the conceptual framework. Moreover, an attitudinal scale of (dis)agreement was used to measure the responses. Furthermore, Confirmatory Factor Analysis (CFA) was employed to confirm the factors. In the end, Structural Equation Modelling (SEM) technique was employed to measure the direct and indirect effects of the proposed model. There were ten hypotheses based on the direct and indirect effects of the model. Moreover, the indirect effects of the model were also tested among variables. The indirect effects were measure by employing indirect effect plugin (Gaskin & Lim, 2018) and the conclusion was drawn.

Results and Discussion

This study asserted that participants had mixed geographical locations (rural and urban) and gender as well (Female=61% and Male=39%). All the participants had an age bracket of 22 to 28 years. It was important here to mention that participants were studying in different programmes and subjects of public and private sector universities. The educational level of their father was ranging from illiterate to above master level. Moreover, the results also showed that participants were living with up to five brothers and seven sisters. In addition to the demographic characteristics of the participants, descriptive statistics of the study presented in table 1. It included range, minimum (Min.), maximum (Max.), mean, std. deviation and variance of the variables used in the research.

Table 1

Descriptive Statistics (n=1358)

Variables	Range	Mini.	Maxi.	Mean	Std. Deviation	Variance
Fathers' Education (in years)	16+	0	16+	7.69	4.586	21.035
Brothers (in numbers)	5	0	5	1.97	1.185	1.404
Sisters (in numbers)	7	0	7	2.67	1.434	2.055
Print Resources (PRRE)	13	7	20	17.62	2.279	5.196
Digital Resources (DIRE)	12	8	20	15.04	2.334	5.449
Research Facilities (REFA)	14	10	24	20.85	3.135	9.825
Study Environment (STEN)	9	7	16	14.27	1.805	3.257

Literature Searching Services (LISS)	12	8	20	17.59	2.364	5.590
Staff Facilitation (STFA)	15	5	20	16.13	3.566	12.718
Student Satisfaction (STSA)	9	11	20	17.80	2.236	4.998

Table 2 described the correlation statistical test of the variables. The results showed that there was a significant positive correlation among all variables. It is worth mentioning to show that research facilities had a high correlation with print resources (.580), literature searching services (.563), and students' satisfaction (.428). Contrary to it, the lowest significant correlation (.098) had been reported between staff facilitation and study environment. Moreover, it revealed that the results showed in the table presented the significance of the variables selected for this study.

Table 2

Correlation Statistical Test (n = 1358)

Var.	PRRE	DIRE	REFA	STEN	LISS	STFA	STSA
PRRE	1	.258**	.580**	.233**	.563**	.247**	.428**
DIRE		1	.302**	.162**	.265**	.136**	.248**
REFA			1	.312**	.507**	.322**	.445**
STEN				1	.212**	.098**	.423**
LISS					1	.504**	.467**
STFA						1	.319**
STSA							1

Hypothesis 1: Research facilities, digital resources, and print resources had direct effects on the study environment in the universities.

The results presented in table 3 supported hypothesis 1 that there was a significant direct effect of research facilities ($\beta = .251$), digital resources ($\beta = .086$), and print resources ($\beta = .069$) on study environment in the universities. Therefore, findings support hypothesis 1. It was important to mention here that print and digital resources provided to students in terms of research facilities. Thus, students used these available facilities to achieve their success in their studies (Gamble et al., 2020). Moreover, universities tried their best level to facilitate students in the context of the

provision of resources to students (Power, Partridge, O’Sullivan, & Kek, 2020). It results in a better study environment for them (Rodriguez, 2020). Moreover, multiple research facilities were available such as print and digital resources for student learning (Pacios & Serna, 2020). Consequently, a friendly study environment created for a better learning approach for students in libraries (Copeland et al., 2020). The study findings were similar to the study findings conducted in developed, developing, and Muslim world (Arthur, 2020; Bock et al., 2020; Encheva et al., 2020; Harlow & Hill, 2020).

Hypothesis 2: Print resources, digital resources, and research facilities had direct effects on literature searching services in the universities.

The study findings presented in table 3 depicted that print resources ($\beta = .394$), digital resources ($\beta = .087$), and research facilities ($\beta = .252$) had direct effects on literature searching services in the universities. Thus, the results support hypothesis 2. It is pertinent to mention here that print and digital resources were provided to research students in libraries of universities (Lantzy et al., 2020). Along with these resources research facilities were also available to students for literature searching concerning specific subjects and disciplines (Perez-Encinas, Rodriguez-Pomeda, & de Wit, 2020). Students availed these digital and print resources for literature searching (Channa et al., 2020). The results of this study were supported by several pieces of research conducted in developed, developing, and Muslim counters in the world (Gunapala et al., 2020; Merga, 2020; Rodriguez, 2020; Saragossi et al., 2020).

Table 3

Regression Weights, Covariances, and Variances (n = 1358)

Variables			Standardized				
			Regression Weights	Estimate	S.E.	C.R.	P
REFA	--->	STEN	.251	.145	.019	7.811	***
PRRE	--->	LISS	.394	.409	.028	14.833	***
DIRE	--->	LISS	.087	.088	.023	3.818	***
DIRE	--->	STEN	.068	.052	.021	2.504	.012
PRRE	--->	STEN	.069	.055	.025	2.189	.029
REFA	--->	LISS	.252	.190	.020	9.352	***

LISS	--->	STSA	.199	.183	.026	7.178	***
PRRE	--->	STSA	.140	.134	.028	4.789	***
REFA	--->	STSA	.125	.087	.020	4.304	***
DIRE	--->	STSA	.064	.059	.022	2.723	.006
STFA	--->	STSA	.115	.070	.013	5.225	***
STEN	--->	STSA	.298	.360	.028	12.845	***
Covariances							
PRRE	<-->	DIRE		1.373	.149	9.213	***
REFA	<-->	DIRE		2.211	.207	10.661	***
REFA	<-->	PRRE		4.143	.224	18.490	***
Variances							
REFA				9.818	.377	26.048	***
PRRE				5.192	.199	26.048	***
DIRE				5.445	.209	26.048	***
e3				12.709	.488	26.048	***
e1				2.911	.112	26.048	***
e2				3.507	.135	26.048	***
e4				3.110	.119	26.048	***

Chi-square = 424.265, df = 6, p-value = .000

Model fit summary = GFI = .938, AGFI = .902, CFI = .907, RMSEA = .069

Total number of observations = 1358

Hypothesis 3: Literature searching services, print resources, and research facilities had direct effects on students' satisfaction in the universities.

Table 3 revealed that there was a significant direct effect of literature searching services ($\beta = .199$), print resources ($\beta = .140$), and research facilities ($\beta = .125$) on students' satisfaction in the universities. Likewise, results also support hypothesis 3. The findings of the study revealed that universities provided the best facilities of literature searching and research facilities to students. They availed these research facilities to complete their studies. Consequently, students were satisfied with the availability of literature searching services and research facilities provided them in university libraries (Hardy & McKenzie, 2020). Moreover, it was worth mentioning here that the Higher Education Commission (HEC) Pakistan was also facilitating to universities in terms of

research facilities. Besides, several studies pointed out that students were satisfied in terms of university library resources not only developing countries but also developed world (Baada et al., 2020; Litsey et al., 2020; Qasim, Al-Askari, Massoud, & Ayoubi, 2020).

Hypothesis 4: Digital resources, staff facilitation, and study environment had direct effects on students' satisfaction in the universities.

Statistical data in table 3 described that digital resources ($\beta = .064$), staff facilitation ($\beta = .115$), and study environment ($\beta = .298$) had direct effects on students' satisfaction in the universities. Consequently, the results supported hypothesis 4. It was noteworthy here to point out that libraries were providing staff facilitation to build a research environment in the universities in Pakistan. The staff at university libraries were facilitating students in terms of digital resources available and also providing a friendly study environment to them (Momunalieva et al., 2020; Power et al., 2020). Similarly, they were providing digital best resources for research to students in the libraries (Appleton, 2020; Harlow & Hill, 2020; Pacios & Serna, 2020). So, they had to complete their studies on time. Likewise, multiple studies also revealed similar nature of results in terms of family life disturbance in developed and developing nations of the world (Odunola & Tella, 2020; Rodriguez, 2020; Rose, Nesbitt, & Galloup, 2020; Soroya & Ameen, 2020).

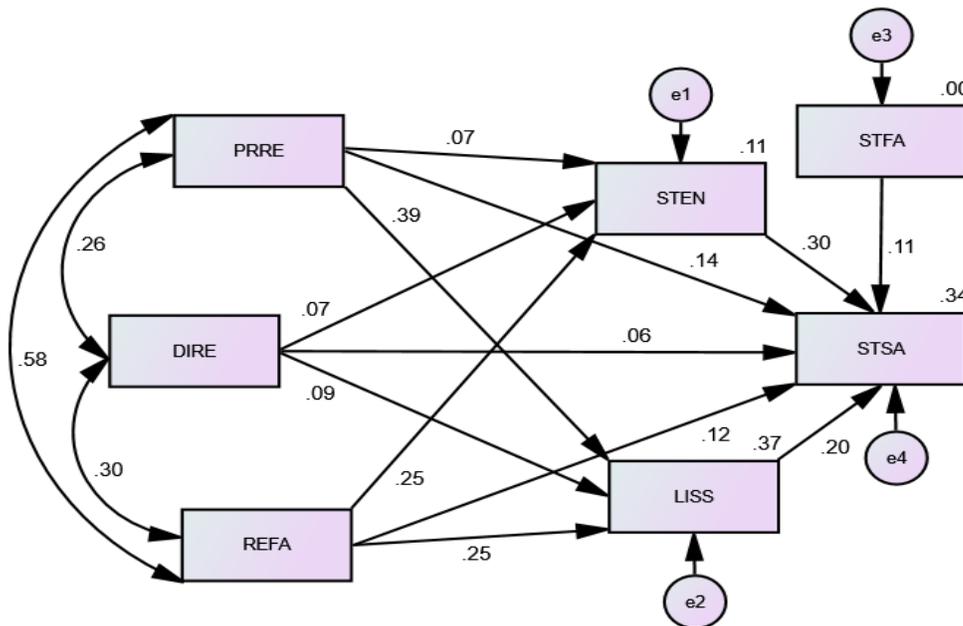


Figure 2: Model Fit Diagram

Hypothesis 5: Digital resources had an indirect effect on students' satisfaction through the mediation of literature searching services in the universities.

Table 4 pointed out the indirect effects of the model. The results presented in table supported hypothesis 5 that there was a significant and indirect effect ($SE = 0.017^{***}$) of digital resources on students' satisfaction through the mediation of literature searching services in the universities. As a consequence, findings revealed that hypothesis 5 was accepted. The study findings reported that literature searching services were playing as a mediating role between digital resources and students' satisfaction in the universities. It was important to mention here that literature searching services were supporting students to the best utilization of digital resources in the universities of Pakistan. Consequently, students were satisfied with the availability of digital resources in the university libraries (Baada et al., 2020; Momunalieva et al., 2020; Soroya & Ameen, 2020). The results of this study were similar to the study findings from developed, developing, and Muslim nations of the world (Gould & Brett, 2020; Habiba & Ahmed, 2020; Saragossi et al., 2020).

Hypothesis 6: Digital resources had an indirect effect on students' satisfaction through the mediation of the study environment in the universities.

The study findings presented in table 4 depicted that there was an indirect effect ($SE = 0.020^*$) of digital resources on students' satisfaction through the mediation of the study environment in the universities. Hence, the results asserted that hypothesis 6 was accepted. It is worth mentioning here that the study environment in the university libraries was providing the best facilitation to use digital resources. Similarly, students were using these digital resources in a better way to complete their research-related assignments in the universities (Gamble et al., 2020). Furthermore, students were satisfied with the digital resources and study environment provided to them in the university libraries in Pakistan. It is important to mention here that HEC was also playing it's an important role to facilitate university libraries in Pakistan. By the same token, several researchers reported similar nature of results not only in developed countries but also in developing and Muslim world (Chidi Nuel-Jean & Okoye, 2020; Habiba & Ahmed, 2020; Odunola & Tella, 2020; Soroya & Ameen, 2020).

Hypothesis 7: Print resources had an indirect effect on students' satisfaction through the mediation of literature searching services in the universities.

Table 4 revealed that there was a significant indirect effect ($SE = 0.078^{***}$) of print resources on students' satisfaction through the mediation of literature searching services in the universities.

Likewise, the results pointed out that acceptance of hypothesis 7. It was important to mention here that print resources were available to students in university libraries in Pakistan. Likewise, other literature searching services in the universities were also adding positively toward students' satisfaction (Chikazhe et al., 2020; Harlow & Hill, 2020; Lantzy et al., 2020). Therefore, students were motivated to utilize print resources and literature searching services in university libraries (Auten et al., 2020; Rose et al., 2020). Hence, they were satisfied in terms of the availability of print resources and literature searching services in the university libraries (Gunapala et al., 2020; Rodriguez, 2020). Similar nature of several studies reported similar results of this pandemic in the developed, developing, and Muslim world (Asamoah, 2020; Bock et al., 2020; Momunalieva et al., 2020).

Hypothesis 8: Print resources had an indirect effect on students' satisfaction through the mediation of the study environment in the universities.

Statistical data in table 4 asserted that there was a significant and indirect effect ($SE = 0.021\ddagger$) of print resources on students' satisfaction through the mediation of the study environment in the universities. As a result, hypothesis 8 was accepted. Therefore, it was important to assert here that the study environment in the university libraries in Pakistan was playing an important role to facilitate students. It facilitated students to utilize print resources and to accomplish their study objectives (Habiba & Ahmed, 2020; Soroya & Ameen, 2020). Moreover, these print resources such as books, journals, newspapers, dissertations, public and private sector organization reports, etc. were available in the university libraries in Pakistan. Hence, students were satisfied to use print resources and study environment as friendly (Marks, 2020). Consequently, the findings of this study were similar to the study findings conducted not only in the Muslim world but also in developed and developing countries of the world (Appleton, 2020; Lantzy et al., 2020; Pacios & Serna, 2020).

Hypothesis 9: Research facilities had an indirect effect on students' satisfaction through the mediation of literature searching services in the universities.

The study findings in table 4 highlighted that there was a significant and indirect effect ($SE = 0.050***$) of research facilities on students' satisfaction through the mediation of literature searching services in the universities. Based on the mediation results, hypothesis 9 was accepted. It is note taking that research facility was provided to students in the university libraries in Pakistan. Students were using these facilities and literature searching services to complete their

research-related assignments on time (Azonobi et al., 2020; Rose et al., 2020; Tzempelikos et al., 2020). Moreover, they were satisfied in terms of research facilities and literature searching services in the university libraries in Pakistan. It was important to mention here that HEC was also facilitating to provide resources to universities to strengthen higher education in Pakistan. Moreover, the similar nature of results was also asserted by several researchers not only in developing countries but also in developed and Muslim nations of the world (Chidi Nuel-Jean & Okoye, 2020; Gould & Brett, 2020; Momunalieva et al., 2020).

Hypothesis 10: Research facilities had an indirect effect on students’ satisfaction through the mediation of the study environment in the universities.

The data in table 4 pointed out that there was a significant and indirect effect (SE = 0.075***) of research facilities on students’ satisfaction through the mediation of the study environment in the universities. The mediation results revealed that hypothesis 10 was accepted. Moreover, it asserted that the study environment provided in the university library was mediating between research facilities and students’ satisfaction (Bock et al., 2020; Gould & Brett, 2020; Habiba & Ahmed, 2020). Hence, students were satisfied while using these services in the university libraries (Mangrum & Foster, 2020; P. K & T. A, 2020). Besides, the study findings were also supported by several results reported in developed, developing, and Muslim countries of the world.

Table 4

Indirect Effects of the Model (n = 1358)

Indirect Path	Unstandardized Estimate	Lower	Upper	P-Value	Standardized Estimate
DIRE --> LISS --> STSA	0.016	0.010	0.025	0.000	0.017***
DIRE --> STEN --> STSA	0.019	0.007	0.033	0.011	0.020*
PRRE --> LISS --> STSA	0.075	0.052	0.100	0.001	0.078***
PRRE --> STEN --> STSA	0.020	0.003	0.038	0.051	0.021†
REFA --> LISS --> STSA	0.035	0.024	0.047	0.001	0.050***

REFA --> STEN --> STSA	0.052	0.040	0.066	0.001	0.075***
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Significance of Estimates: *** p < 0.001, ** p < 0.010, * p < 0.050, † p < 0.100

Conclusion

We conclude that the library is a great source of getting information. Moreover, the digital library has further eased to secure the newer and updated information generally for the researchers, scholars, social scientists, and particularly for the students enrolled in the universities. It is found that the best environment is provided to the students at each university. Similarly, the students are provided with all the necessary facilities to search the information and sort-out the updated knowledge on the topics of their interest. Currently, the students are getting benefits from all the online sources and meeting the demands of the research in the present era. It is thus concluded that the libraries in universities are mainly fulfilling the requirements of the students according to the changing landscapes of society. It is also revealed that research-intensive students are satisfied with available library resources. The study recommended that students should be facilitated by providing the latest digital and print resources within the university library. Moreover, it is noteworthy to mention here that these resources in the university library should be updated annually to keep up to date students with the latest knowledge produced in their relevant fields.

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