Internet and Online Newspaper Accessing Behaviour of Pakistani Academics: A Survey at Sindh University, Jamshoro

Bashir Memon

University of Sindh, Jamshoro, Pakistan bashir.memon@usindh.edu.pk

M. Ramzan Pahore

University of Sindh, Jamshoro, Pakistan bashir.memon@usindh.edu.pk

ABSTRACT

This article discusses internet use and online newspaper accessing behaviour of academics at the Faculty of Social Sciences, University of Sindh, Jamshoro. A self-completion close-ended questionnaire was designed and copies distributed among a purposive-sample of academic staff at the University. The sample included all the faculty members (i.e. visiting, on contract and regular) working in the Department of Social Sciences. The study found that academics who are internet-users, or 'netters', for the most part, used internet at their residences – home and hostel, and accessed mostly two online newspapers. Finally, the majority of academics preferred to access English-language online newspapers.

Keywords: academics, netters, readers, online newspapers

INTRODUCTION

It was observed that digital media have altered the traditional model of media distribution by enabling information and ideas to be shared and exchanged by a greater number of users simultaneously (Hanson & Yu, 2010, p. 337). The Internet has now become a major source of information (Dimitrova & Neznanski, 2006, p. 249) and a well-established news medium (Chyi, 2005, p. 131). It is argued that the Internet's characteristics allow its audiences to choose and select the extent of their online exposure. Moreover, regarding the perception of the Internet, it has become a more significant source of information compared to traditional mass media (Kim & Johnson, 2009, p. 283), and also an inherentlyglobal medium (Chyi & Sylvie, 2001, p. 232), which has transformed the world into one global community (Srinivas & Liu, 2000, p. 502). Furthermore, Dimitrova, Daniela and Neznanski have illustrated that

its access varies within countries and internationally particularly in terms of availability and technology (Dimitrova & Neznanski, 2006, p. 260).

Internet use is growing rapidly in Asia and this bodes well with the region's online newspapers (Massey & Levy, 1999, p. 523). In the 21st Century, thousands of newspapers, magazines, other publications, and TV and radio stations are available online; with millions of web users consuming news on the Internet every day (See Dimitrova & Neznanski, 2006, p. 248). As Internet news contents greatly outnumbered those available in print or on television (Tweksbury, 2005, p. 535), consumers'choices for news go beyond the small number of print newspaper options available in any given market (Tweksbury, 2005, p. 535). Withthe competitiveness of new media like the Internet, newspapers are no longer attractive to young readers (Wolswinkel, 2008, p. 2).

This article is an attempt to fill the research gap of new media consumption in the Sindh Province, Pakistan. It specifically focuses on Internet use frequency, Internet accessing location, and in the context of new media, the number of online newspapers that are accessed by academics in the Faculty of Social Sciences, University of Sindh, Jamshoro, as well as the language used. This study also investigates the relationship between demographic variables (i.e. professional status, gender and age) and academics' internet use frequency, location and online newspapers reading habits.

METHODOLOGY AND SAMPLING

Self-completion questionnaires were distributed among all the faculty members in all departments of the Faculty of Social Sciences, University of Sindh, Jamshoro, during the first half of the year 2013. The sample was selected by applying a purposive and opportunistic technique with the intention to collect data from as many academics as possible. In addition, the survey was inclusive of all those academics who were employed on contract basis i.e. Research Associates and Visiting Faculty (RAs/VF), and those who were permanent i.e. Lecturers (Ls), Assistant Professors (APs), Associate Professors and Professors (AsPs/Ps) in the various teaching departments of the Faculty of Social Sciences, University of Sindh, Jamshoro. The questionnaires were administered by the researchers who in most cases were available during the questionnaire distributions as queries could be answered and the completed questionnaires collected securely.

The questionnaires covered topics related to using the Internet, accessing online newspapers, preferring a particular time and day, newspaper language, number of hours reading online newspapers, and required demographic variables. A total of 103 academics in the Faculty of Social Sciences completed the questionnaires. At the time of the survey, the total faculty population in the social sciences faculty, University of Sindh, Jamshoro, was 134 academics, according to the "Undergraduate Catalogue 2013". This figure was inclusive of all the faculty members i.e. visiting, on contracts and permanent. However, out of a total of 134, 22 of them were either on study leave or on sabbatical. Thus, the number of academics available for the survey was 122.In accordance, the response rate of the survey was 84.42%.

FINDINGS

Demographic profile of the respondents

The respondents' demographic profiles were recorded to help ascertain the kind of internet accessing behaviour of different types of lecturers. Respondents' professional status, gender, mother language and age were asked.

Table 1: Distribution of respondents by demographics variables

	Number	Percentage (%)
Professional Status		
Research Associate	15	(15)
Visiting Faculty	4	(4)
Lecturer	44	(44)
Assistant Professor	25	(25)
Associate Professor	2	(2)
Professor	10	(10)
Gender		
Male	71	(73.2)
Female	26	(26.8)
Mother language		
Sindhi	86	(88.7)
Siraiki	5	(5.2)
Dhatki	2	(2.1)
Baluchi	3	(3.1)
Other	1	(1.0)
Age		
0-30	26	(27.4)
31-40	40	(42.1)
41-50	10	(10.5)
Above 50	19	(20.0)

According to Table 1, more than two-fifths (44.0%) of the respondents worked as Lecturers, a quarter (25.0%) as Assistant Professors and 15.0% as Research Associates. Whereas, the lowest proportion worked as Associate Professors (2.0%), then Visiting Faculty (4.0%) and the remaining one-tenth (10.0%) as Professors. In the context of gender, the majority (73.2%) was male. Most of the academics concerned (88.7%) spoke Sindhi, then Siraiki (5.2%), Baluchi (3.1%), Dhatki (2.1%) and others (1.0%). Finally, the age of the academics varied with the highest proportion (42.1%) being 31 to 40 years old, and slightly over a quarter (27.1%) was up to 30 years old. The first lowest proportion (10.5%) was between 41 to 50 years old and the second lowest (20.0%) over 50 years old. Therefore, based on the findings, a typical academic in the Faculty of Social Sciences, University of Sindh, Jamshoro, would be a lecturer, male,

who spoke Sindhi and between 31 to 40 years old.

Internet using frequency, location, and online newspapers

Internet use and online newspaper reading were also recorded in the survey.

Table 2: Composition of respondents by internet use and online newspaper reading

Number Demontors (0/)					
	Number	Percentage (%)			
Accessing internet					
Yes	84	(81.6)			
No	7	(6.8)			
Sometimes	12	(11.7)			
Place to access internet					
Home/Hostel	61	(67.0)			
Office	29	(31.9)			
Other	1	(1.1)			
Number of newspapers being					
accessed					
One	21	(26.6)			
Two	27	(34.2)			
More than two	31	(39.2)			
Preferred newspaper language					
Sindhi	12	(17.9)			
Urdu	8	(11.9)			
English	47	(70.1)			

In Table 2, the majority of the surveyed academicians (81.6%) were internet users (netters), with another 11.7% being 'sometimes' users. This finding has similarities with the findings from a Taiwanese study done previously, where the results showed that the majority of 64.2% of internet users, used it daily (Wang, 2007, p. 382). Moreover, it was deduced that under the digital capitalism, the net had become a personalised electronic device (Murdock, 2002), and that 'Internet use is at times highly personal' (Livingstone, 2004). Thus, in this study, the majority (67.0%) of the respondents reported accessing the Internet from their residences i.e. home and hostel, with the second highest proportion (31.9%) accessing it from their offices. The remaining 1.1% accessed the net at 'other' places than the above mentioned locations. As far as accessing the number of newspapers was concerned, out of a total of 79 respondents, the highest proportion (39.2%) expressed reading more than two online newspapers, over one-third (34.2%) said they read two online newspapers, whereas the remaining proportion (26.6%) read just one online newspaper. Finally, in the perspective of newspaper language, the majority of the academicians (70.1%) preferred English online newspapers and the second highest proportion (17.9%) read Sindhi online newspapers, while the remaining lowest

proportion (11.9%) read Urdu online newspapers.

Internet usage

Frequency of accessing the internet was also asked in the survey. The results were analysed based on professional status, gender, and age categories.

Table 3: Distribution of respondents by internet usage (N%)

	Accessing Internet			
Professional status	Yes	No	Sometimes	Total
Research Assoc. and Visiting Faculty	14 (16.9)	1 (20.0)	4 (33.3)	19 (19.0)
Lecturer	39 (47.0)	1 (20.0)	4 (33.3)	44 (44.0)
Assistant Professor	22 (26.5)	1 (20.0)	2 (16.7)	25 (25.0)
Assoc. Professor and Professor	8 (9.6)	2 (40.0)	2 (16.7)	12 (12.0)
Total	83 (100)	5 (100)	12 (100)	100 (100)
Gender				
Male	61 (75.3)	3 (75.0)	7 (58.3)	71 (73.2)
Female	20 (24.7)	1 (25.0)	5 (41.7)	26 (26.8)
Total	81 (100)	4 (100)	12 (100)	97(100)
Age categories*				
0 to 30 years	24 (29.6)	0 (0.0)	2 (22.2)	26 (27.4)
31 to 40 years	37 (45.7)	1 (20.0)	2 (22.2)	40 (42.1)
Above 40 years	20 (24.7)	4 (80.0)	5 (55.6)	29 (30.5)
Total	81 (100)	5 (100)	9 (100)	95 (100)

^{*} χ 2= 10.03, P0.04, df = 4.

As mentioned earlier, the majority of the academicians (92.2%) were netters - internet-users. When this proportion was further analysed (see Table 3) into the respective professional status, the Research Associates/Visiting Faculty (RAs/VF) has the highest in the proportion of 'sometimes' netters (33.3%) than regular netters and non-netters (16.9% and 20.0% respectively). In contrast, Lecturers (Ls) and Assistant Professors (APs) were highest in the proportions of regular netters (47.0% and 26.5% respectively) compared to the 'sometimes' netters (33.3% and 16.7% respectively) and non-netters (20.0% and 20.0% respectively). Whereas, among the Associate Professors (ASPs) and Professors (Ps), the average proportions of non-netters (40.0%) was higher than regular netters and 'sometimes' netters (9.6% and 16.7% respectively). Overall, the RAs/VF were more 'sometimes' netters, Ls and APs were more regular netters, whereas the AsPs and Ps on average, were more non-netters.

With regards to gender, it was observed that among male academicians, the proportion of regular netters (75.3%) was greater than the 'sometimes' netters and non-netters (58.3% and 75.0% respectively). On the contrary, the female academicians' proportion of 'sometimes' netters (41.7%) was more than regular netters and non-netters (24.7% and 25.0% respectively).

Thus, the findings indicated that on average the male academicians were more regular netters than their female counterparts. Finally, in the respect of age, those academicians between 0 to 30 years old and 31 to 40 years old showed higher proportions being regular netters (29.6% and 45.7% respectively) than the 'sometimes' netters (0.0% and 20.0% respectively) and the non-netters (22.2% and 22.2% respectively). However, those above 40 years old were 'sometimes' netters and 'non-netters' (55.6% and 80.0% respectively), more than regular netters (24.7%). Accordingly, it was found that academicians up to 40 years old on average, were more regular netters than those who were above 40 years old.

Internet access location

The survey also asked the respondents where they had accessed the Internet. The results were analysed based on their professional status, gender and age categories.

Table 4: Distribution of respondents by place to access internet (N%)

Tuble ii bistiibution of	Tesp since	, <u>, , , , , , , , , , , , , , , , , , </u>		
	Place to access internet			
Professional status	Home/hostel	Office	Other	Total
Research Assoc. and Visiting	15 (25.0)	2 (6.9)	0(.0)	17 (18.9)
Faculty				
Lecturer	22 (36.7)	17 (58.6)	0(.0)	39 (43.3)
Assistant Professor	17 (28.3)	6 (20.7)	1 (100.0)	24 (26.7)
Assoc. Professor and Professor	6 (10.0)	4 (13.8)	0 (.0)	10 (11.1)
Total	60 (100)	29 (100)	1 (100)	90 (100)
Gender				
Male	43 (72.9)	20 (71.4)	43 (72.9)	63 (71.6)
Female	16 (27.1)	8 (28.6)	16 (27.1)	25 (28.4)
Total	16 (100)	28 (100)	16 (100)	88 (100)
Age categories				
0 to 30 years	19 (32.8)	7 (26.9)	0 (.0)	26 (30.6)
31 to 40 years	26 (44.8)	10 (38.5)	0 (.0)	36 (42.4)
Above 40 years	13 (22.4)	9 (34.6)	1 (100.0)	23 (27.1)
Total	58 (100)	26 (100)	1 (100.0)	85 (100)

Regarding the location in accessing the Internet, it was mentioned earlier that the majority of the academicians (67.0%) accessed internet from their residences i.e. homes and hostels, whereas the remaining academicians (31.0%) were office-netters. Furthermore (see Table 4), when it was analysed further in the respective professional status, then proportions of residence-netters of RAs/VF and APs averaged around 25.0% and 28.3% respectively, higher than office-netters (6.9% and 20.7% respectively). In contrast, Ls and AsPs/Ps recorded higher proportions being office-netters at 58.6% and 13.8% respectively, which were greater than residence-netters (36.7% and 10.0% respectively). In the gender context, male academicians on average, surfed the internet from their residences (72.9%) slightly more than the office-netters

(71.4%). The female academicians however, preferred surfing from the office (28.6%), rather than from their residences (27.1%). Finally, in the age group, with regards to those between 0 to 30 years old and 31 to 40 years old, the proportions of residence-netters (32.8% and 44.8% respectively) on average were higher than office-netters (26.9% and 38.5% respectively). In contrast, those academicians above 40 years old preferred the office (34.6%) than their residences (22.4%).

Thus, the findings indicated that RAs/VF, and APs on average were more residence-netters, compared to the Ls and AsPs/Ps whom were more office-netters. Gender-wise, the male academicians were more residence-netters than the females whom spent more time at the office surfing. Finally, those up to 40 years old were more residence-netters, whereas academicians above 40 years old were more office-netters.

Accessing the number of online newspapers

It was remarked earlier that a typical surveyed academician (39.2%) reads an average of more than two online newspapers. The second highest proportion of slightly more than one-third (34.2%) reads two online newspapers, while the remaining proportion of a little more than one-fourth (26.6%) reads one online newspaper. In addition (see Table 5), when analysed further in the respective professional status, it was found that the RAs/VF, AsPs/ Ps on average, have the highest proportions of reading two online newspapers (25.9% and 14.8% respectively), higher than those who read only one (19.0% and 9.5% respectively) and those who read more than two (16.7% and 6.7% respectively). Among the Ls, the proportion of those who read more than two newspapers (50.0%) was greater than those who read one (28.6%) and two online newspapers (44.4%). Where APs were concerned, the majority read one newspaper (42.9%), better than those who read two (14.8%) and more than two newspapers (26.7%). Thus, the findings revealed that RAs/VF and AsPs/Ps on average were two online newspaper readers, with Ls reading more than two newspapers. The APs were on average one-newspaper reader. In the respect of gender, it was observed that among the male academicians, the proportion of those who read more than two newspapers (87.1%) was higher than those who read one (57.1%) and two (68.0%). The female academicians mostly read one newspaper (42.9%), with 32.0% reading two and 12.9% read more than two newspaper. From this, it was deduced that the male academicians on average were twonewspaper readers, and their female counterparts reading one newspaper.

Finally, in the context of age, academicians between 0 to 30 years old read two newspapers (38.5%) higher than reading one newspaper (38.1%) and more than two newspapers (24.1%). In contrast, those who were between 31 to 40 years old on average preferred reading more than two online newspapers (58.6%), higher than reading one newspaper at 14.3%, and two online newspapers (34.6%). Whereas, among those who were above 40 years old, the proportion of being a one newspaper reader (47.6%) was greater than two (26.9%) and more than two (17.2%) newspapers. Hence, the findings indicated that up to the age of 30 years old, academicians on average were two-newspaper readers, and those academicians between 31 to 40 years old were on average read more than two newspapers. However, the academicians above 40 years old were only one-newspaper readers.

Table 5: Distribution of respondents by number of newspaper being accessed (N%)

	N	umber of new	spapers accessed	i
Professional status	One	Two	More than	Total
Research Assoc. and Visiting Faculty Lecturer	4 (19.0) 6 (28.6)	7 (25.9) 12 (44.4)	two 5 (16.7) 15 (50.0)	16 (20.5) 33 (42.3)
Assistant Professor Assoc. Professor and Professor Total	9 (42.9) 2 (9.5) 21 (100)	4 (14.8) 4 (14.8) 27 (100)	8 (26.7) 2 (6.7) 30 (100)	21 (26.9) 8 (10.3) 78 (100)
Gender Male Female Total	12 (57.1) 9 (42.9) 21 (100)	17 (68.0) 8 (32.0) 25 (100)	27 (87.1) 4 (12.9) 31 (100)	56 (72.7) 21 (27.3) 77 (100)
Age categories 0 to 30 years 31 to 40 years Above 40 years Total	8 (38.1) 3 (14.3) 10 (47.6) 21 (100)	10 (38.5) 9 (34.6) 7 (26.9) 26 (100)	7 (24.1) 17 (58.6) 5 (17.2) 29 (100)	25 (32.9) 29 (38.2) 22 (28.9) 76 (100)

^{*} χ 2= 6.08, P.04, df = 2;** χ 2= 11.43, P.02, df = 4.

Reading specific language online newspaper

Since there are several languages in which newspapers are published, the survey enquired about this as well.

As mentioned earlier, a typical surveyed academician (70.1%) preferred to read Englis- language online newspapers, then Sindhi (17.9%) and Urdu-language online newspapers (11.9%). However, when analysed further, in the context of professional status (see Table 6), the proportions RAs/VF and APs read online newspapers in Urdu (25.0% and 50.0% respectively), which were higher than in Sindhi (8.3% and 16.7% respectively) or in English (17.4% and 26.1% respectively). On the contrary, among Ls and AsPs/Ps on average, the proportions of Sindhi-language online newspaper readers (58.3% and 16.7% respectively) were greater than in Urdu (25.0% and 0.0% respectively) and in English (47.8% and 8.7% respectively). Thus, the findings revealed that the Urdu-language online newspaper readers were found to be more popular among RAs/VF and APs, whereby, the readers of the Sindhilanguage online newspaper on average were the Ls and AsPs/Ps.

In the perspective of gender, the findings showed that male academicians preferred reading online newspapers in Urdu (75.0%), over Sindhi (58.3%) and English (68.9%). In contrast, female academicians have shown preferences to Sindhi-language online newspapers (41.7%) than in Urdu (25.0%) and in English (31.1%). These indicated that on average, the male

academicians were more inclined to read Urdu-language online newspapers and the female academicians were more into Sindhi-language online newspapers. Finally, in the perspective of age, those between 0 to 30 years old has the highest proportion of reading English-language online newspapers (36.4%), compared to Sindhi and Urdu online newspapers (25.0% and 12.5%). Whereas, those between 31 to 40 years and above 40 years old read Urdu-language online newspaper (50.0% and 37.5% respectively), higher than Sindhi (41.7% and 33.3% respectively) and English online newspapers (38.6% and 25.0% respectively). Overall, the findings indicated that academicians up to the 30 years old on average were more Englishlanguage online newspaper readers, whereas those above 30 years old on average read more online newspapers in Urdu.

Table 6: Distribution of respondents by specific language newspaper (N%)

		_	age newspape	
		9		
Professional status	Sindhi	Urdu	English	Total
Research Assoc. and Visiting	1 (8.3)	2 (25.0)	8 (17.4)	11 (16.7)
Faculty				
Lecturer	7 (58.3)	2 (25.0)	22 (47.8)	31 (47.0)
Assistant Professor	2 (16.7)	4 (50.0)	12 (26.1)	18 (27.3)
Assoc. Professor and Professor	2 (16.7)	0 (.0)	4 (8.7)	6 (9.1)
Total	12 (100)	8 (100)	46 (100)	66 (100)
1000	,	()		
Gender				
Male	7 (58.3)	6 (75.0)	31 (68.9)	44 (67.7)
Female	5 (41.7)	2 (25.0)	14 (31.1)	21 (32.3)
Total	12 (100)	8 (100)	45 (100)	65 (100)
	,	()		
Age categories				
0 to 30 years	3 (25.0)	1 (12.5)	16 (36.4)	20 (31.2)
31 to 40 years	5 (41.7)	4 (50.0)	17 (38.6)	26 (40.6)
Above 40 years	4 (33.3)	3 (37.5)	11 (25.0)	18 (28.1)
Total	12 (100)	8 (100)	44 (100)	64 (100)
10141	12 (100)	0 (100)	()	. ,

DISCUSSION AND CONCLUSION

In this study, it was observed that the typical surveyed academician in the context of his professional status, was a lecturer (44.0%), male (73.2%), spoke Sindhi (88.7%) and mostly belonged to the age category of 31 to 40 years old (42.1%). Regarding internet use, the typical academician was a netter (93.2%). It was observed that Ls and APs were more regular netters than RAs/VF, whereas the AsPs and Ps on average were more non-netters. In the gender context, it was found that on average, the male academicians were more regular netters than female academicians. Finally, on the subject of age, academicians up to the age of 40 years old were more regular netters than those above 40 years old. In the perspective of favorite location to surf the net, the typical academician (67.0%) was a residence-netter. However, when analysed further with regards to professional status, the RAs/VF, and APs were found to be more residence-netters than Ls and AsPs/Ps, who were office-netters. In gender perspective, male academicians were more residence-netters as compared to their female colleagues, who were office-netters. Finally, in age context, those up to 40 years old were residence-netters. However, academicians above 40 years old preferred the office.

Regarding accessing the number of online newspapers, the typical academician (34.2%) was said to read mostly two newspapers. Moreover, in the perspective of professional status, RSs/VF and AsPs/Ps on average, were readers of two online newspapers. The Ls reads more than two online newspapers, while the APs were one online newspaper readers. In gender context, it was observed that the male academicians were readers of more than two online newspapers, in contrast to their female colleagues who were mostly one online newspaper readers. In the context of age, the findings revealed that the academicians of up to 30 years old on average read two online newspapers. And those between 31 to 40 years old read more than two online newspapers. Whereas, the academicians above 40 years old read mostly one online newspaper. Finally, on language preferences, it was observed that the typical academician (70.1%) read English-language online newspapers. However, by analysing further in the context of professional status, the findings showed that the Urdulanguage online newspaper on average were more popular among the RAs/VF and APs, with the Sindhi-language online newspapers as the choice among Ls and AsPs/Ps. Genderwise, male academicians were mostly Urdu-language online newspaper readers, while the females read mainly in Sindhi. In age perspective, those up to 30 years old on average were more English online newspaper readers, as opposed to those above 30 years old on average, preferring the Urdu-language newspapers.

REFERENCES

- Chyi, I. H. (2005). 'Willingness to pay for online news': An empirical study on the viability of the subscription model. *Journal of Media Economics*, 18(2), 131-142.
- Chyi, I. H., & Sylvie, G. (2001). The medium is global, the content is not: The role of geography in online newspaper market. *Journal of Media Economics*, 14(4), 231-248.
- Dimitrova, D. V., & Neznanski, M. (2006). Online journalism and the war in cyberspace: A comparison between U.S. and international newspapers. *Journal of Computer-Mediated Communication*, 12 (2006), 248-263.
- Hanson, E. C., & Yu, Z. (2010). Foreign direct investment policies in Chindia's media. *Global Media and Communication*, 6(3), 337-345.
- Kim, D., & Johnson, T. J. (2009). A shift in media credibility: Comparing internet and traditional news sources in South Korea. *International Communication Gazette*, 71(4), 283-302.
- Livingstone, S. (2004). The challenge of changing audiences: Or, what is the audience researcher to do in the age of the internet? *European Journal of Communication*, 19(1), 75-86.
- Massey, B. L., & Levy, M. R. (1999). 'Interactive' online journalism at English-Language web newspapers in Asia: Adependency Theory analysis. *International Communication Gazette, 61*(6), 523-538.
- MelkoteSrinivas, R., & Liu, J. D. (2000). The role of the internet in forging a pluralistic integration: A study of Chinese intellectuals in the United States. *International Communication Gazette*, 62(6), 495-504.
- Murdock, G. (2002). Review article: Debating digital divides. *European Journal of Communication*, 17(3), 385-390.
- Tweksbury, D. (2005). The seeds of audience fragmentation: Specialization in the use of online news sites. *Journal of Broadcasting & Electronic Media*, 49(3), 332-348.



- Undergraduate Catalogue 2013. In U. o. S. Jamshoro (Ed.), (pp. 142-174): University of Sindh, Jamshoro.
- Wang, S.-I. (2007). Political use of the internet, political attitudes and political participation. *Asian Journal of Communication*, *17*(4), 381-395.
- Wolswinkel, H. (2008). Newspaper reading: The explaining factors of newspaper reading behavior of young adults. Unpublished Master's Thesis, University of Twente.