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RESEARCH PAPER

Assessing the Impact of Personal Knowledge and Information Management Behaviours on the Research Productivity of Agriculture Researchers

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ABSTRACT

The study aimed to evaluate the impact of personal knowledge and information management behaviours and their various aspects on the research productivity of agriculture researchers. By employing simple random sampling, 230 agriculture researchers were selected who were working in the agriculture wing of Punjab, Pakistan. A quantitative and cross-sectional research method was used for the study. Data were collected through a questionnaire. Valid and reliable scales were employed to gather data from participants. The data were statistically analysed using SPSS (Edition 27). The results were obtained using multiple regression and correlational analyses. The findings reveal a positive and significant impact of personal knowledge and information management behaviour and its various aspects on the research productivity of agriculture researchers. The study suggested recommendations for future studies and policymakers. The study contributes to the literature on the intersection of personal knowledge information management, and research productivity.

KEYWORDS Personal Information Management, Personal Knowledge Management, Research Productivity

Introduction

Effective personal knowledge and information management behaviours play a vital role in determining the productivity and effectiveness of researchers (Barquin, 2001). Personal Information management also plays a critical role in supporting innovation and well-informed decision-making in agriculture (Purcell & Neubauer, 2023). Agriculture is struggling with ever-changing issues including food security and sustainability (Nasirahmadi & Hensel, 2022).

The dynamic field of agricultural research is characterized by a convergence of ever-increasing amounts of data. For example, advances in technology, and complex problems. Within this context, one important factor that becomes apparent is the influence of personal knowledge and information management behaviours on research productivity (Farajpahlu & Namdari, 2022; Husain & Nazim, 2013; Naveed, 2021). The methods that agricultural researchers use to gather, arrange, and analyse data are critical in determining the effectiveness of the scholarly work. Because they produce it as they traverse the challenges of the field. Effective personal knowledge and information management behaviour is not only a procedural but also a strategic lever that impacts the whole research process (Świgoń, 2013a, 2017). This includes question creation, methodology design, and findings synthesis.

In the realm of agricultural research, sustainable farming practices and global food security pose serious risks. Efficient knowledge and information management can have a significant impact on decision-making. A massive amount of data including and socioeconomic aspects must be navigated by agriculture researchers have to search a massive amount of data (Ingram et al., 2022). This includes but is not limited to crop sciences, soil management, and pest control. Adept information management provides awareness to researchers about recent developments in the field. This awareness encourages innovation and the uptake of cutting-edge technologies (Vyas, Shabaz, Pandit, Parvathy, & Ofori, 2022).

Research productivity in agriculture is impacted by personal knowledge and information management behaviour (Kryszak, Świerczyńska, & Staniszewski, 2023). There are many reasons to study this relationship. First of all, research in agriculture encompasses a wide range of fields. Soil management, crop sciences, and plant pathology, soil science, and plant breeding and genetics. Optimizing research processes and enabling a more integrated approach to address agricultural concerns demands a coherent approach. This study attempts to provide this approach by examining the impact of personal knowledge and information management behaviours on research productivity.

Second, the urgency of global challenges like food security and sustainable agriculture demands informed and innovative decision-making to fight these challenges. Hence the understanding of personal knowledge and information management behaviours is required to inform innovative policy making. This will help researchers to build their capacities to stay current on emerging trends and adopt new technologies.

Finally, efficient information management reduces potential risks associated with information overload. Scholars possessing strong information management abilities are more capable of identifying important patterns in data. They can eliminate duplicates and combine data coherently. All of these support the creation of superior agricultural research (Brown & Jones, 2018).

The study contributes a nuanced understanding of the complex correlation between personal knowledge information management behaviour, and research productivity. In the context of agriculture research the study synthesizes and builds upon previous works.

The study aims to assess the impact of personal knowledge and informant behaviour on the research productivity of agriculture researchers. By evaluating the impact of personal knowledge and information management behaviour, the study seeks to increase the productivity of agricultural researchers' research.

Literature Review

Several studies have postulated a convergence between the complicated relationship between personal knowledge and information management and their impact on research productivity (ABOWHA, 2022; Kahn & Scott, 1997; Li & Zhang, 2022; Madukoma & Adekunle, 2022). Kryszak et al. (2023) research highlight this relationship in their study on agricultural research. He highlights the critical role that efficient personal information management plays in helping researchers navigate the intricacies of various disciplines. They include crop sciences, soil management, and socio-economic aspects. This multidisciplinary viewpoint emphasises the crucial role information

management strategies play in meeting the diverse needs of agricultural research (Dilrukshi, 2017; Nasirahmadi & Hensel, 2022; Vyas et al., 2022).

Recently, considerable evidence has accumulated to show personal knowledge and information management affect research productivity (Oyeniyi, 2020; Piasecki, Chen, & McAuley, 2022; Rajkumar & Njenga, 2022). Kryszak et al. (2023) offered insights into the worldwide issues of food security and sustainable agriculture. They focus on the necessity of ongoing innovation in food security. Naveed (2021) and Naveed (2022) found in their study that personal knowledge and information management behaviour are effective in helping researchers stay up to date with the newest advancements. This work highlighted the importance of personal knowledge and information management behaviour in implementing technology to solve pressing agricultural problems.

Madukoma and Adekunle (2022) and Neogi (2021) added to our understanding of data relevance and information overload. They highlighted the importance of having strong personal knowledge and information management abilities to guarantee the usefulness of research productivity. According to their research, researchers who have good personal knowledge and information management techniques are in a better position to identify important ideas. They avoid duplication and produce impactful research.

A substantial body of literature suggests the significant influence of personal knowledge and information management behaviour on the productivity of agricultural researchers' research (Debauche, Mahmoudi, Manneback, & Lebeau, 2022; Ingram et al., 2022; Kryszak et al., 2023; Purcell & Neubauer, 2023; Vyas et al., 2022). They synthesised the body of available material on information management. Researchers like Arshad, Saleem, and Mahmood (2022) stressed the critical role that efficient information management plays in generating quality research. Customised approaches are necessary to deal with the massive influx of information. In addition, Bartol, Dolničar, Podgornik, Rodič, and Zoranović (2018) also found the function of knowledge and information management in encouraging ongoing innovation and well-informed decision-making. A thick body of research found that proficient information management enhances research procedures (Ali & Warraich, 2022; Bareh, 2021; Naveed & Rafique, 2018; Saadia & Naveed, 2022; Singh, 2008; Webber & Johnston, 2000; Whittaker, 2011). This places researchers in a position to tackle urgent problems like sustainability and food security. Additionally, Yagnasridevi and Jeyshankar (2019) and Saleem, Ameen, and Ashiq (2021) found the importance of having strong information management abilities to guarantee the quality and applicability of research findings. When taken as a whole, these summarized results highlight the crucial relationship between personal knowledge and information management behaviour and research productivity of agricultural researchers.

Although previous research offers significant insights, more thorough studies are still required to examine the precise impact of personal knowledge and information management behaviour on the research productivity of agriculture researchers (Cushing, 2023; Madukoma & Adekunle, 2022). We propose that personal knowledge and information management behaviour have a positive impact on the research productivity of agricultural researchers. Thus, this research aims to assess the impact of personal knowledge and information management behaviour on the research productivity of agriculture researchers working in the agriculture research wing of Punjab, Pakistan.

Materials and Methods

The study used a simple random sampling strategy. The agricultural researchers employed by the Punjab Agriculture Wing comprised the study sample. In-person meetings and the distribution of online questionnaires on social media platforms were used to collect data (Facebook, WhatsApp, etc.). The data was contributed by twenty-seven research organisations that fall under this umbrella. 350 questionnaires were sent to get a representative sample of agricultural researchers. A total of 260 questionnaires were completed (response rate: 76%). Thirty questions were incomplete and contained several missing values. Consequently, these surveys were not considered. 230 surveys were ultimately found to be legitimate and thorough.

Świgoń (2013b) developed an attitudinal scale of personal knowledge and information management behaviour, which was used in this investigation. The attitudinal measure was used for this study because it has been widely used in previous research to evaluate information management behaviour and individual knowledge. When applied to assess key ideas such as gathering and finding information, structuring and storing information, and selecting and interpreting information, it has shown to be valid and dependable. The study's comparability and coherence with the body of earlier research on this topic are ensured by using this pre-established scale.

To make sure the scale is legitimate and appropriate for the target group in terms of language and culture, some items were added and removed. This attitudinal scale of (dis)agreement comprised various sections including Information Gathering and Searching (IGS) 2(Information Organizing, Keeping and Securing (IOK) 3(Information Selecting and Evaluating (ISE).

There were two sections to the questionnaire. The first section included questions on demographics, such as gender, title, qualification, work experience, area of specialisation, and type of job. The second section includes PKI, REP, ISE, and IGS. The elements of these important research variables were measured using a five-point Likert scale, where 1 represents strongly disagree and 5 represents strongly agree. Six items on the subscale IGS assess information searching and collecting. Cronbach's value for it is 79. Six items on the subscale of IOK measured respondents' opinions regarding the organisation, maintaining, and safeguarding information. On this scale, Cronbach's value is 72. In a similar vein, the subscale ISE comprises eight items that assess the inclination of respondents to obtain and assess information. Cronbach's value for it is 80. The PIM has a Cronbach's value of.76 and consists of 20 components. In the end, the total number of publications, book chapters, conference papers, and students supervised over the previous five years was used to calculate REP. A pretest of 35 respondents was conducted to assess the validity and reliability of the questionnaire. Every scale exhibited internal reliability, with Cronbach's scores ranging from 72 to 80.

To evaluate the research hypotheses of the study, we employed a cross-sectional survey. Using SPSS (27 edition), the study used the correlation analysis technique and multiple regression analysis. Multiple regression and correlation analysis are accepted statistical techniques in the social sciences that are used to estimate the relationship between complex variables. Correlation analysis was used to compare the key study variables, such as personal knowledge, information management behaviours, and research productivity. Using this method, any significant correlations between these variables can be discovered. Multiple regression analysis was utilised to ascertain the extent to which research productivity was predicted by personal knowledge and information management behaviours after adjusting for other relevant variables. The

exploration of the unique roles that personal knowledge and information management behaviours play in explaining variations in research productivity is made possible by this methodology.

The dependent variable's normality was confirmed before the multiple regression analysis was performed. The dependent variable appeared to be approaching normalcy based on a preliminary analysis of its skewness and kurtosis values (skewness < 3.0; kurtosis < 10.0). More specifically, the homoscedasticity of the residuals produced as the null hypothesis was evaluated using the White (1980) test statistic. To confirm that collinearity was not a problem in the current investigation, bivariate correlations and variance inflation factors (VIF) were analysed; the greatest VIF was discovered to be far below the traditional cut criterion.

Results and Discussion

Descriptive data for participant sociodemographic factors are included in Table 1. It contains categorical data including years of experience, gender, age, and the type of work, as well as professional degree and current employment function. Regarding the type of work, most people (95.6%) have regular jobs, whilst fewer people (4.4%) have contractual agreements. In terms of professional degrees, 55.2% have a Ph.D. and 44.8% have an M.Phil. According to the job distribution, practitioners make up 73.9% of the workforce, while teachers make up 26.1%. There were 38.7% female participants and 61.3% male participants, according to the gender breakdown. The age distribution is shown in two brackets: 36.2% of the population is in the 25–35 age range, and 34.9% is in the 36–46 age range.

Table 1
Sociodemographic Variables

Categorical variables	*f*	%
Nature of job		
Regular	220	95.6
Contractual	10	04.4
Professional Degree		
M.Phil	103	44.8
PhD.	127	55.2
Job		
Practitioner	170	73.9
Teacher	60	26.1
Gender		
Male	141	61.3
Female	189	38.7
Age		
25-35	84	36.2
36-46	81	34.9
Experience		
0-9	88	38.3
10-19	78	33.9
20-29	47	20.4
30-34	17	7.4

Key insights into the main trends and variances in the dataset are provided by the table's descriptive statistics for the study variables. Information Organizing, Keeping,

and Securing (IOK), Information Selection and Evaluation (ISE), Research Productivity (REP), Personal Knowledge and Information Management Behaviours (PKI), and Information Gathering and Searching (IGS) are some of the variables. The mean for IGS is 3.299, with a standard deviation of 3.299, a variance of 10.887, and a range of 17. IOK has a variance of 5.558, a standard deviation of 2.849, and a mean of 25.769, with a range of 12. ISE displays a standard deviation of 8.120 and a mean of 34.191, with a range of 15.

PKI measure has a mean of 85.434, with a standard deviation and variance of 55.679 and a range of 36, respectively. The last statistic is REP, which has a variance of 225.389 and a mean of 21.086 with a range of 96 to 15.012. These descriptive statistics provide a basic knowledge of the features of the dataset by offering a succinct overview of the primary tendencies, range, and variability within each study variable.

Table 2
Descriptive Statistics of the Study Variables

Vari	Mean	Range	Stand D	Variance
IGS	3.299	17	3.299	10.887
IOK	25.769	12	2.357	5.558
ISE	34.191	15	2.849	8.120
PKI	85.434	36	7.461	55.679
REP	21.086	96	15.012	225.389

IGS: Information gathering and searching, **IOK:** Information organizing, keeping and securing, **ISE:** Information selection and evaluation, **PKI:** Personal knowledge and Information management behaviours, **RPP:** Research Productivity

Table 3
Correctional Analysis among Study Variables

Var._Code	IGS	IOK	ISE	PKI	REP
IGS	1				
IOK	.71	1			
ISE	.67	.54	1		
PKI	.53	.63		1	
REP	.40	.61	.53	.39	1

Regression analysis

Hypothesis1: Information gathering and searching significantly positively impact research productivity.

Hypothesis 1 evaluates whether Information gathering and searching significantly positively impact research productivity. The results reveal that Information gathering and searching significantly positively impact research productivity ($B = .432$, $t = 5.403$, $p < .001$). Hence Hypothesis is supported. Put another way, the purpose of Hypothesis 1 was to determine whether the information-gathering and search process increased research productivity. The findings show that, in fact, the process of gathering and searching for information significantly improves the effectiveness of the research. Strong support for Hypothesis 1 is provided by the statistical results which show that this correlation is not likely the result of chance. In summary, research productivity tends to be more effective when researchers are more comprehensive and efficient in their information-gathering and search methods.

This result is in line with previous studies conducted by (ABOWHA, 2022; Adavi & Acker, 2023; Ahmad, 2017). Similarly, studies of Jain (2020) and Madukoma and

Adekunle (2022) also point towards the impact of Information gathering and searching on the research productivity of agriculture researchers. A potential explanation of these results is that information gathering and searching are crucial to the whole process of research. Hence proficiency in information gathering and searching leads to more production of scientific papers and books (Schulze, Trenz, Cai, & Tan, 2023). Comparison of the findings with those of other studies confirms the impact of Information gathering and searching on research productivity (ABOWHA, 2022; Madukoma & Adekunle, 2022). This line of reasoning is also supported by Kryszak et al. (2023).

Hypothesis 2: Information organizing, keeping and securing significantly positively impact research productivity.

Hypothesis 2 evaluates whether Information organizing, keeping and securing significantly positively impact research productivity. The results reveal that Information organizing, keeping and securing significantly positively impact research productivity (B =.391, t = 4.502, p < .001). Hence hypothesis 2 is supported. To put it plainly, Hypothesis 2 examined whether the processes of gathering, preserving, and protecting knowledge increase the output of research. The results indicate that using these information management behaviours greatly boosts the productivity of research. Hypothesis 2 is supported by the statistical values. These results show a strong and statistically significant link. To put it simply, researchers who are proficient at gathering, preserving, and safeguarding their data typically produce more research.

Table 4
Multiple regression analysis

Hypotheses	Regression weights	B	t	p-value	Results
H1	IGS→REP	.432	5.403	.000	Approved
H2	IOK→REP	.391	4.502	.000	Approved
H3	ISE→REP	.519	3.023	.000	Approved
H4	PKI→REP	.585	6.033	.000	Approved
R^2	.473				
F (3, 346)	319.061				

Note: p < 0.05. IGS:, IOK:, ISE:, PMB: , RPP: REsearch Productivity

Prior studies have noted the importance of Information organizing, keeping and securing in research productivity of agriculture researchers (Cushing, 2023; Rajkumar & Njenga, 2022; Schulze et al., 2023). Additionally, a strong relationship between Information organizing, keeping and securing, and research productivity has been reported in the literature (Madukoma & Adekunle, 2022; Świgoń, 2017; Van Alstyne, 2023). Consistent with the literature, this research found that participants who reported using Information organizing, keeping and securing techniques have more publications and conference papers than those who did not (Madukoma & Adekunle, 2022). Likewise, this finding broadly supports the work of other studies in this area linking Information organizing, keeping and securing with research productivity (Farajpahlu & Namdari, 2022; Naveed & Rafique, 2018; Zins, 2006).

Hypothesis 3: Information selection and evaluation significantly positively impact research productivity.

Hypothesis 3 evaluates whether Information selection and evaluation significantly positively impact research productivity. The results reveal that Information selection and evaluation significantly positively impact research productivity (B = .519, t

= 3.023, p < .001). Hence hypothesis 3 is supported. Simply put, Hypothesis 3 investigated whether the processes of information selection and evaluation significantly increase research productivity. The results indicate that getting involved with these procedures greatly raises the productivity of research. Hypothesis 3 is supported by the statistical, which indicate a strong and statistically significant connection. In other words, researchers who are skilled at choosing and analyzing data typically produce more when conducting the study. Tend to be more successful in research productivity.

By the present results, previous studies have demonstrated that Information selection and evaluation are correlated with research productivity (Ashrafi-Rizi, Najafi, Kazempour, & Taheri, 2015; Bareh, 2021; Daryazadeh & Kuhpayehzadeh, 2015). In the same vein, This result corroborates the findings of a great deal of the previous work done on the nexus between Information selection and evaluation and research productivity (Gorji, Darabieniya, & Ranjbar, 2015; Ingram et al., 2022; Lambie, Hayes, Griffith, Limberg, & Mullen, 2014; Lambie & Vaccaro, 2011). Consistent with the literature, this research found that respondents who reported using Information selection and evaluation methods had more impact factors than those who did not (Daryazadeh & Kuhpayehzadeh, 2015). This also accords with our earlier observations, which showed the correlation between Information selection and evaluation and research productivity (Kryszak et al., 2023; Li & Zhang, 2022; Madukoma & Adekunle, 2022).

Hypothesis 4: Personal knowledge and Information management behaviours significantly positively impact research productivity.

Hypothesis 4 evaluates whether Personal knowledge and Information management behaviours significantly positively impact research productivity. The results reveal that Personal knowledge and Information management behaviours significantly positively impact research productivity (B = .585, t = 6.033, p < .001). Hence hypothesis is supported. Hypothesis 4 examined whether information management and personal knowledge behaviours together significantly boost research productivity in the particular setting of agriculture research. The results confirm that researchers who successfully carry out these actions see a significant increase in their output. Hypothesis 4 is strongly supported by the statistical results. These values show a strong and significant link. This suggests that combining personal information management behaviour with one's personal knowledge management is essential for increasing research productivity in the field of agriculture. Researchers who are adept at managing their knowledge as well as information are more likely to be productive, which could result in improvements in innovative technology uptake, resilience of agricultural systems, and sustainable farming practises.

This study confirms that Personal knowledge and Information management behaviours are correlated with research productivity (Cushing, 2023; Piasecki et al., 2022; Zavaraqi & Safaie, 2022). This line of argument was also reported by (Schulze et al., 2023; Senthur Selvi & Ganesan, 2022; Świgoń, 2013a). This study supports evidence from previous observations that Personal knowledge and Information management behaviours positively impact research productivity. Equally, this finding matches those observed in earlier studies (Husain & Nazim, 2013; Jain, 2020; Jones & Teevan, 2007). This result is in agreement with those obtained by Husain and Nazim (2013) and Jain (2020). This result supports previous research into this information management area which links Personal knowledge and Information management behaviour with research productivity (Madukoma & Adekunle, 2022).

Conclusion

To conclude, this study has underpinned the impact of personal knowledge and information management behaviours on the research productivity of agriculture researchers. The findings provide strong evidence for the hypotheses. They also show that higher research productivity in the field is positively impacted by efficient information gathering, organizing, selecting, and general personal knowledge and information management. These results highlight the crucial role personal knowledge as well as information management behaviours play in building research productivity. In summary, this study provides a basic investigation into the complex connections between personal knowledge information management behaviours, and research productivity of agriculture researchers. The study establishes a foundation for future investigations into sustainability. and cross-cultural differences of these behaviours. It also contributes significantly to the current debate on the nexus between agricultural research and personal information management behaviour.

Recommendations

The study makes several recommendations for future research and practice. Firstly, the study recommends training programmes to improve the productivity of agricultural researchers in their research. The training programmes should emphasise improving information management behaviours and personal knowledge among agriculture researchers. These programmes ought to include a strong emphasis on efficient methods for compiling, organizing, and choosing data. This will give researchers the tools they need to conduct their studies as efficiently as possible. Secondly, Workflow can be further streamlined and a group approach to knowledge management can be fostered. This will be done by supporting the integration of modern information management systems within the agriculture research community. Thirdly, to foster a supportive research environment, institutions should offer resources and institutional support.

For future studies, the study suggests further research in agriculture should be carried out using longitudinal studies to examine the durability and enduring impacts. Further research should look into how these behaviours specifically affect researchers' ability to be innovative. Furthermore, how these behaviours create new technical solutions that are specifically designed to meet the needs of agriculture researchers. Multidisciplinary research that looks at the interactions between information management, and research productivity can offer a more thorough understanding of the intricate dynamics at work in this subject.

The efficient management of one's knowledge and information is important as agriculture struggles with global issues. This can impact the direction of research productivity in the future. The study acts as a stepping stone in agricultural research because it provides insights and recommendations for both future research and current practice.

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