

## Factors Influencing Performance of Applied Research: Evidence from Universities in the Kurdistan Region of Iraq

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### ABSTRACT:

Knowing what influences researchers on conducting applied research in developing countries is of interest to policymakers in higher education institutions. This study utilized a quantitative approach to investigate factors that drive academics in the higher education institutions in the Kurdistan Region of Iraq on conducting applied research. For this purpose, data were collected using a survey from researchers at different universities and fields and then were analyzed using the probit model. Based on the main findings of this study, the probability of conducting applied research increases as the years of experience increase when a researcher has external funding, while the probability decreases as the years of experience increase when a researcher has only the knowledge of applying to external funding without actually having any funding available. This study recommends some actions that help in promoting the research field in the higher education institutions in the Kurdistan Region of Iraq.

**Keywords:** Applied Research, External Funding, Probit Model, Years of Experience.

### 1. Introduction

There are several definitions for research provided by many scholars. While their definitions vary to some extent, most of them have concurred that research aimed to introduce novel knowledge. Implications from reliable research can boost the economic development of the country and therefore enhance the standard of living for its inhabitants, the reason behind developed countries spending substantial money on research and development (RD). For example, Israel, which its economy boosted in recent years, is the World leader in expenditure on RD as it spent 4.95% of its gross domestic product (GDP) on RD in 2018 (World Bank, 2021).

Table 1 provides some data that can be used to assess the research sector in Iraq. Among its neighbors, Iraq had the lowest expenditure on research as only 0.04% of its GDP was assigned for RD in 2017. Although the contribution of GDP to RD is not substantial in Iraq, a positive trend in research expenditure can be noticed as expenditure on research increased by 122% in 2017 compared to 2010. Regarding the number of researchers in RD, Iraq had the lowest number of researchers among its neighbors. A negative trend can be noticed in the number of researchers which it might be caused due to the fights

against ISIS and the political and economic crises that Iraq faces recently which lead several Iraqi scholars and bright minds to leave the country.

Publication of scientific and technical journal articles can be used as a proxy for the number of research conducted at higher education institutions or research centers since most research ends up with publication during the research process. As we can notice, Iraq has been dominated by its neighbors in the number of scientific publications, but the trend is positive as the number of publications was substantial in 2017 compared to 2010. Our study is motivated by these development indicators to inquire into the factors that drive research performance in Iraqi higher education institutions. Therefore, the main objective of this study is to investigate the variables that have a significant impact on conducting applied research in higher education institutions in the Kurdistan region of Iraq. Applied research is essentially problem-oriented which aimed to solve specific problems that face people and therefore improve the well-being of the overall society.

This analysis coordinates with the broad literature of the research productivity perspective. One well-established research productivity theory is proposed by Hu & Gill (2000), which is called the Life-Cycle theory, suggesting that, in general, the productivity of research increases

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substantially in the primal stages of the researcher's career, then reaches the apex during the time of tenure lapse, and finally starts a decrement. Factors that significantly influence the research productivity of academics were examined by past researchers (Cargile & Bublitz, 1986; Diamond, 1986; Levitan & Ray, 1992; Goodwin & Sauer, 1995; Chow & Harrison, 1998;

Buchheit *et al.*, 2001). These studies have identified the most significant factors that influence the productivity of research for academic researchers which can be summarized as the tenure status, the length of time assigned for conducting research, the duration of the tenure tentative period, the length of time allocated for teaching, and finally the financial support.

Table 1. Development Indicators for Iraq and its Neighboring Countries

Variable	Country	Year		
		2010	2015	2017
<b>Expenditure on RD (% of GDP)</b>				
	Iran	0.264	0.417	0.830
	Iraq	0.036	0.037	0.044
	Jordan	NA	NA	NA
	Kuwait	0.101	0.096	0.080
	Saudi Arabia	0.884	NA	NA
	Syria	NA	0.020	NA
	Turkey	0.798	0.881	0.961
<b>Researchers in RD (per million people)</b>				
	Iran	743.101	825.279	1,474.913
	Iraq	432.015	65.810	105.922
	Jordan	NA	252.412	595.962
	Kuwait	136.034	395.766	501.565
	Saudi Arabia	NA	NA	NA
	Syria	NA	90.957	NA
	Turkey	889.584	1,211.785	1,379.411
<b>Publication of Scientific and Technical Journal Articles</b>				
	Iran	25,319	37,229	46,727
	Iraq	553	894	2,259
	Jordan	1,448	1,454	1,962
	Kuwait	744	875	861
	Saudi Arabia	3,642	8,949	10,041
	Syria	232	266	263
	Turkey	26,486	33,233	33,836

Note: NA refers to Not Applicable due to data unavailability.

Source: World Bank (2021).

All these studies were mostly focused on descriptive analysis while the inferential analysis has been marginalized in the literature. This paper is among a very few studies that utilized the quantitative approach to analyze the determinants of conducting applied research in a developing country. We turned on an unanswered question of the impact of each of the research productivity drivers on the probability of conducting applied research using the probit model. The rest of this paper is designed as follows. In section 2, the model is described and the steps of analyzing data are explained. Section 3 explained the process of data collection followed by the graphical presentation of the responses that are not included in the analysis model. The findings of this study and discussion are presented in section 4

followed by the main conclusion and recommendations in section 5.

## 2. Model

Given the dichotomous nature of the dependent variable, which can take only two values of whether 1 for conducting applied research or 0 otherwise; the probit regression illustrated by Equation (1) is an appropriate model to find the impact of each regressor on the probability of the dependent variable. Let "Research" represents the binary research identification with  $X\beta$  denoting the variables expected to have an impact on conducting applied research (Greene, 2008).

$$\begin{aligned}
 Research_i^* &= X_i'\beta + \varepsilon_i, \quad \varepsilon_i \sim N[0,1] \\
 Research_i &= 1 \text{ if } Research_i^* > 0, \text{ otherwise } Research_i = 0
 \end{aligned}
 \tag{1}$$

where  $x$  is a vector of some explanatory variables that determine the state of research,  $\beta$  is coefficients to be estimated, and  $\varepsilon$  is a normally distributed error term with zero mean and one standard deviation.

Then the probability of conducting applied research is specified in Equation (2) using the standard probit specification (Das, 2019).

$$\begin{aligned}
 \text{Prob}(Research_i = 1|X_i) &= \Phi(X_i'\beta) \\
 \text{Prob}(Research_i = 1|X_i) &= \int_{-\infty}^{X_i'\beta} \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{\varepsilon_i^2}{2}\right) d\varepsilon_i
 \end{aligned}
 \tag{2}$$

where  $\Phi$  is the cumulative distribution function of standardized error.

Using a normal distribution, the likelihood function follows as in Equation (3):

$$\begin{aligned}
 Likelihood &= \prod_{i=1}^n [\Phi(X_i'\beta)]^{(Research_i)} [1 - \Phi(X_i'\beta)]^{(1 - Research_i)} \\
 LogLikelihood &= \sum_{i=1}^n Research_i \ln\Phi(X_i'\beta) + (1 - Research_i) \ln[1 - \Phi(X_i'\beta)]
 \end{aligned}
 \tag{3}$$

Independent variables described with  $X$  can be both binary and continuous. Let  $X_{ij}$  be a typical dummy variable with two classes, and  $W_j$  is a continuous variable. As shown in Equation (4), dealing with a model having several dummy variables requires restricting the

summary of the coefficients for the dummy class to zero. Using this convenience approach makes the intercept of the model to represent the average researcher for any values are set for the continuous variable  $W$ .

$$\begin{aligned}
 X_i'\beta &= \hat{\beta}_0 + \sum_{i=1}^2 \hat{\beta}_i X_{ij} + \hat{\gamma}_1 W_j + \hat{\varepsilon}_j \\
 X_i'\beta &= \hat{\beta}_0 + \hat{\beta}_1 (X_{1j} - X_{2j}) + \hat{\gamma}_1 W_j + \hat{\varepsilon}_j
 \end{aligned}
 \tag{4}$$

The likelihood of conducting applied research is expected to be influenced by the funding availability, degree, collaboration, knowledge of granting funds, and experience. Using the approach noted in equation (4),  $X\beta$  is specified to reflect these variables as shown in Equation (5). The availability of funding to conduct research is defined by *Fund* to capture the importance of having external funding for doing research, while the degree is represented by *PhD* to examine the necessity of having a doctoral degree for doing research compared to the master's degree. The collaboration among colleagues

for conducting research is denoted by *Collaboration* to be compared with the case when there is only a single researcher. The knowledge of applying for external funding is also of interest which is defined by *Knowledge*. The years of experience of a researcher are denoted by *Experience*. Finally, the interactions between experience and fund, and experience and knowledge are also included in the model which is expressed by *ExpFund* and *ExpKnow*, respectively.

$$\begin{aligned}
 X_i'\beta &= \beta_0 + \beta_1(Fund_1 - Fund_2) + \beta_2(PhD_1 - PhD_2) + \beta_3(Collaboration_1 - Collaboration_2) \\
 &+ \beta_4(Knowledge_1 - Knowledge_2) + \beta_5Experience + \beta_6ExpFund + \beta_7ExpKnow
 \end{aligned}
 \tag{5}$$

The last two terms in Equation (5) are particularly important in that they give a quick way to measure changes in the likelihood of conducting research for an experienced researcher who is differentiated from the rest of the researchers by either having external funding

or having the knowledge on how to apply for external funding. However, the sign of the coefficients estimated using the probit model can be interpreted but not the magnitude, the marginal effects which can be calculated using Equation 6, are of potential interest.

$$\partial Research_i / \partial X_j = \Phi(X_i'\beta) \beta_j
 \tag{6}$$

For a continuous variable, the marginal effects can be calculated by differentiating the dependent variable with respect to the explanatory variable, while for the binary or categorical variables, these effects are calculated as the change of the dependent variable, given the binary or categorical change of the explanatory variable.

A questionnaire was designed for data collection. The academic members at different institutions in the Kurdistan Region of Iraq were being asked if they have conducted applied research recently and other related questions like their motivation for conducting research and the collaboration among colleagues on doing research. Different social media platforms were used to reach researchers as face-to-face data collection was not possible due to the restrictions and city lockdown caused

### 3. Data

by the COVID-19 pandemic in 2020. More than 300 researchers contributed to this survey, but responses from 235 of them were only used in the analysis due to

missing some information. Table 2 shows the participation rate of researchers from different universities.

Table 2. Universities Participation

University	Percentage
Duhok	62.67
Duhok Polytechnic	3.56
Erbil Polytechnic	0.44
Garmian	0.44
Halabja	0.44
Human Development	0.44
Nawroz	1.33
Salahaddin	2.67
Soran	2.22
Sulaimani	2.67
Sulaimani Polytechnic	0.89
Zakho	22.22

The questionnaire started with asking questions about the discipline of the participants. The majority of researchers were holding a master’s degree as shown in Figure 2. Figure 3 shows the ratio of participants who had external funding while conducting applied research. As we can notice, most of them claimed that they did not have external funding for conducting their research. The lack of cooperation and collaboration between the higher

education institutions and other sectors is another reason as it is not easy to convince the private sector and other governmental agencies to provide researchers with the fund they need to conduct scientific research. Previous studies showed that funding availability is one of the main determinants of research accomplishment for research academics (Wood, 1990).

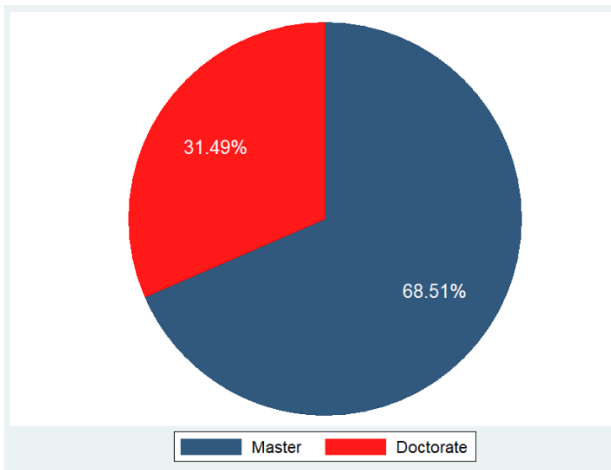


Figure 2. Degree of Participants

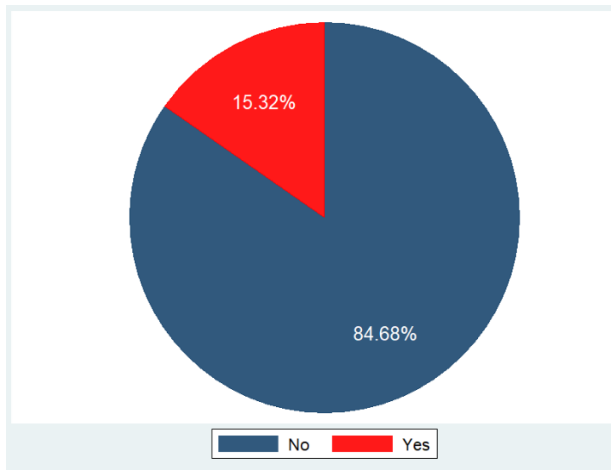


Figure 3. Having Fund to Conduct Research

The participants were being asked about their motivation for conducting applied research and the majority of them responded with the academic promotion. As we can see from Figure 4 that receiving an offer from a colleague to collaborate on a project or study is not high enough. The question of to what extent the community is interested to

collaborate and bringing the problems to different departments at the universities for analysis was answered by the participants to the best of their knowledge. It can be noticed that the collaboration between the departments and the community is good enough as shown in Figure 4.

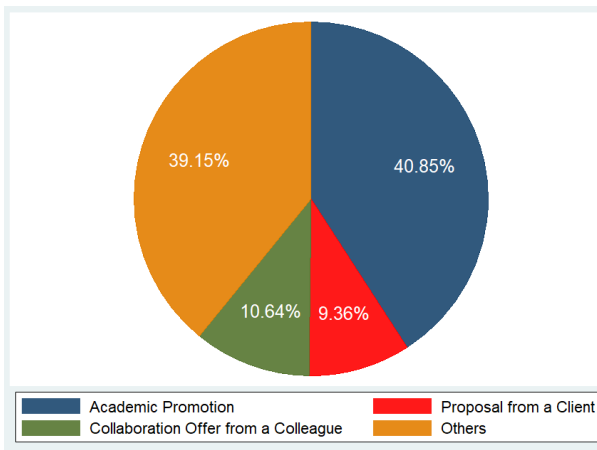


Figure 4. Motivation for Conducting a Research

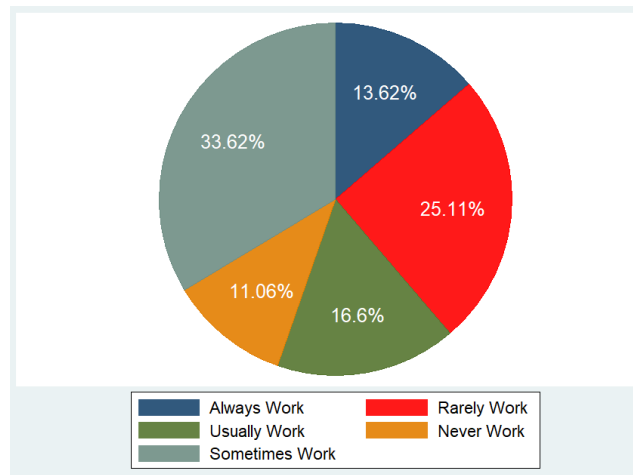


Figure 5. The extent of Collaboration between the Departments and the Community

The participants were being asked if they have enough knowledge on how to apply for external funding for conducting applied research. Unfortunately, the majority of them do not know how to find an external fund to support their research as shown in Figure 6. Finally, the participants were being asked about the support they need to be able to conduct applied research. As shown in

Figure 7, most of them see the collaboration among colleagues as the main support needed for conducting research followed by money to cover the cost of the research. Acharya & Pathak (2019) recommended that collaboration outside the border would enhance the research productivity of researchers in low-income countries.

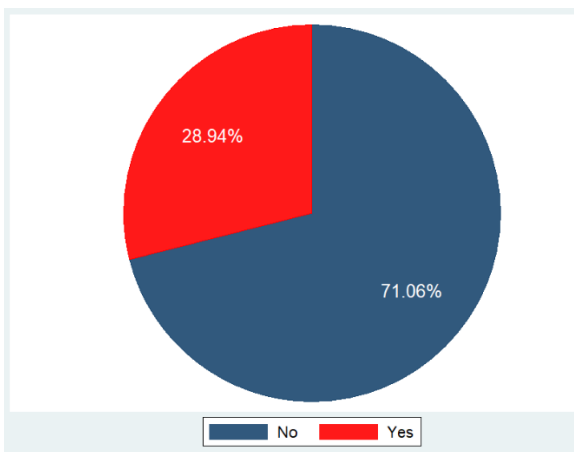


Figure 6. Knowledge to Apply for a Fund

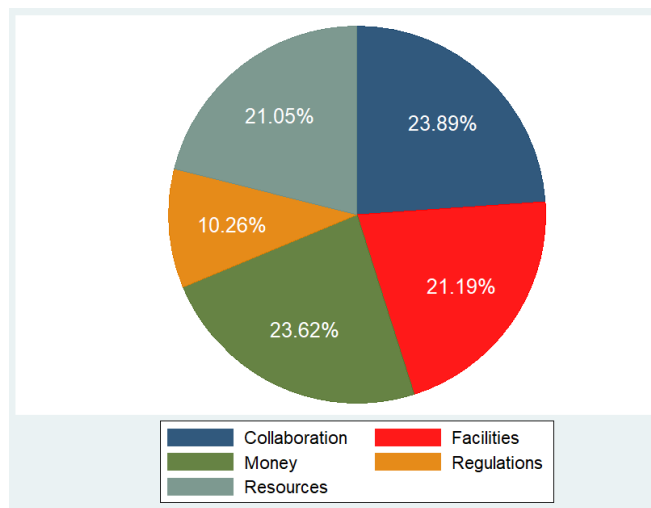


Figure 7. Support Needed to Conduct Research

#### 4. Results and Discussions

Based on the overall significance test outcome, i.e., the Wald chi-square test of (26.46) with (Prob > chi2 = 0.0004), the null hypothesis that all of the regression coefficients are simultaneously equal to zero is rejected. In other words, the model provides a good fit of the data and is statistically useful for prediction. The consistency of this test is also checked using Pearson goodness-of-fit test. The non-significance  $p$ -value of the test (Prob > chi2 = 0.287) can also be used as an indication that the model is fitting the data well. Table 3 summarizes the estimates of the probit regression along with the supporting statistics. Notice that the dependent variable is the fraction of the university researchers who conducted applied research.

Since the last coefficient for each dummy variable is the negative of the other coefficient for each binary variable, each  $z$ -value provides a test of the significance relative to the average researcher. Nearly most  $z$ -values for binary variables are not significant indicating that these variables do not have a statistically significant impact on the likelihood of conducting applied research. The knowledge of applying for external funding is the only binary variable that has a positive and significant impact on the likelihood of conducting applied research indicating that researchers who know how to apply for external funding are more likely to conduct applied research. Holding a doctoral degree was expected to have a positive and significant impact on conducting applied research compared to the master's degree holders, but its impact is not significant. This result is consistent with

Chen *et al.* (2006) who did not find a relationship between research productivity and academic discipline. Surprisingly, the effect of experience is not also statistically significant indicating that the lack of

experience as a researcher does not prevent them from not conducting applied research in higher education institutions.

Table 3. Probit Estimates for Conducting Research

Dependent Variable: Research	Coefficient	Robust Std. Err.	z	P>z
Constant	-0.714**	0.207	-3.46	0.001
Fund	-0.501	0.468	-1.07	0.284
PhD	-0.066	0.207	-0.32	0.748
Collaboration	0.195	0.187	1.04	0.297
Knowledge	1.028**	0.388	2.65	0.008
Experience	0.001	0.015	0.05	0.964
ExpFund	0.139**	0.044	3.17	0.002
ExpKnow	-0.095*	0.041	-2.34	0.019
Number of observations = 235		Wald chi2(7) = 26.46		
Log of pseudolikelihood = -137.179		Prob > chi2 = 0.0004		
** and * indicate significance at 1% and 5% levels, respectively.				

An interaction of *Experience* with each of *Fund* and *Knowledge* is of our interest in that they capture the impact of the years of experience as a researcher along with the availability of external funding and the knowledge of applying for external funding on the likelihood of conducting applied research, respectively. The results clearly show that the impact of the interaction between experience and funding is positive and statistically significant on the likelihood of conducting applied research while the impact of the interaction between experience and knowledge is negative and statistically significant on the likelihood of conducting applied research.

The magnitudes of the coefficients in probit models do not have a direct meaning and only the sign and the statistical significance of the coefficients can be used to examine the impact of the studied variables on the likelihood of conducting applied research. Therefore, the nature of the response to each variable of interest is estimated in terms of the marginal effects. Table 3

provides the model estimates which are in turn used in the subsequent sections to show the marginal effects of conducting applied research in terms of the years of experience considering into account the availability of external funding.

As shown in Table 4, except for the researcher without having experience in research, the availability of external funding increases the probability of conducting applied research and this increase in probability increases as the years of experience increase. For example, consider a researcher with five years of experience. The probability for this researcher conducting applied research is 33% when there is no funding available while this probability increases to 40% with the funding availability. This means the availability of external funding added about 7% to the probability of conducting applied research when the researcher has five years of experience while this ratio increases to 34% (61% - 27%) as the years of experience increase to ten years.

Table 4. Marginal Effects of Applied Research in Terms of Years of Experience Differentiated by Funding Availability

Dependent Variable: Research	Margin	Std. Err.
No Experience without Funds	0.382**	0.059
No Experience with Funds	0.230*	0.107
5 Years of Experience without Funds	0.330**	0.040
5 Years of Experience with Funds	0.401**	0.104
10 Years of Experience without Funds	0.279**	0.033
10 Years of Experience with Funds	0.618**	0.088
15 Years of Experience without Funds	0.239**	0.042
15 Years of Experience with Funds	0.802**	0.083
20 Years of Experience without Funds	0.214**	0.053
20 Years of Experience with Funds	0.906**	0.061

25 Years of Experience without Funds	0.202**	0.066
25 Years of Experience with Funds	0.950**	0.043
30 Years of Experience without Funds	0.197*	0.081
30 Years of Experience with Funds	0.969**	0.037

\*\* and \* denote significance at 1% and 5% levels, respectively.

To differentiate the situation of having external funding from not having it on the probability of conducting applied research as the years of experience increase, the results of Table 4 are then summarized in Figure 8. It can

be noticed how the availability of external funding increases the probability of conducting applied research as the years of experience increase.

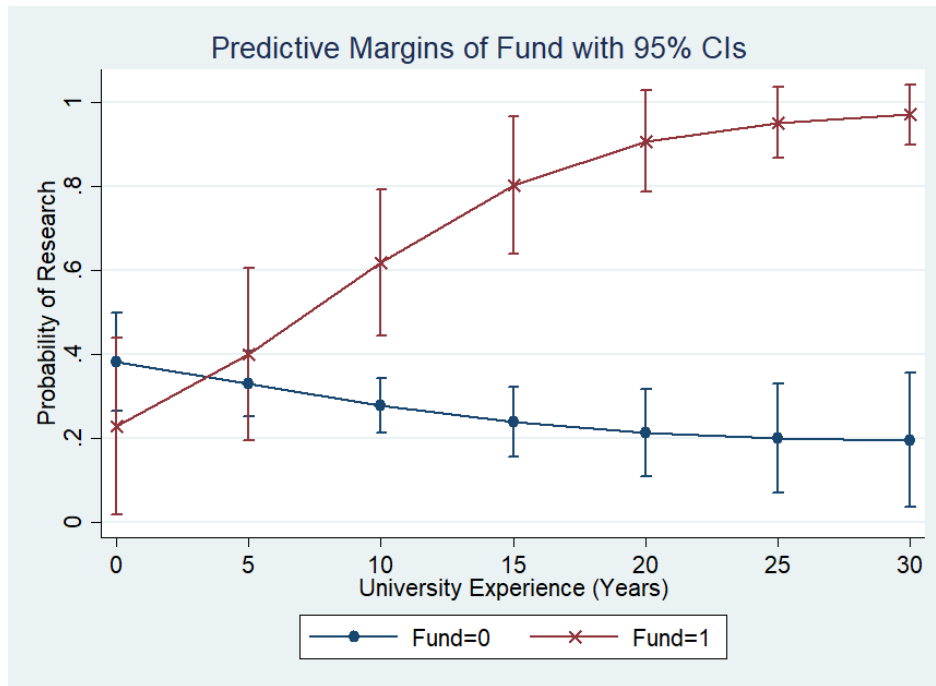


Figure 8. Marginal Effects of Applied Research in Terms of Years of Experience Differentiated by Funding Availability

In the same way, the results of the marginal effects of conducting applied research in terms of the years of experience considering into account the knowledge of applying for external funding are shown in Table 5. Knowing applying for external funding increases the probability of conducting applied research as the years of experience increases until ten years of experience and then the probability declines. For example, for a researcher with five years of experience, the probability of conducting applied research is 28% when the researcher does not know how to apply for external funding while this probability increases to 48% when enough knowledge is available. As the years of experience increases to fifteen years, the researcher is expected to conduct applied research with the probability of 35% when the person does not know about applying

for external funding while the same person has the probability of 24% for conducting applied research if this person knows how to apply for external funding. The negative effect of the years of experience is consistent with Chen *et al.* (2006) who also noticed that research productivity is negatively correlated with the increase in academic experience due to the decline of extrinsic motivation as a result of the acquisition of tenure and promotion.

This scenario is also summarized in Figure 9 to differentiate the case of knowing applying for external funding from not having it. As we can notice, there is a substantial difference in probabilities for the same year of experience based on the knowledge of funding applications.

Table 5. Marginal Effects of Applied Research in Terms of Years of Experience Differentiated by Knowledge of Funding Application

Dependent Variable: Fund	Margin	Std. Err.
No Experience without Knowledge	0.248*	0.053
No Experience with Knowledge	0.629*	0.124

5 Years of Experience without Knowledge	0.281*	0.041
5 Years of Experience with Knowledge	0.487*	0.081
10 Years of Experience without Knowledge	0.324*	0.037
10 Years of Experience with Knowledge	0.350*	0.063
15 Years of Experience without Knowledge	0.359*	0.045
15 Years of Experience with Knowledge	0.244*	0.072
20 Years of Experience without Knowledge	0.377*	0.059
20 Years of Experience with Knowledge	0.181*	0.064
25 Years of Experience without Knowledge	0.384*	0.077
25 Years of Experience with Knowledge	0.152*	0.044
30 Years of Experience without Knowledge	0.386*	0.096
30 Years of Experience with Knowledge	0.144*	0.028

\* denotes significance at 1% level.

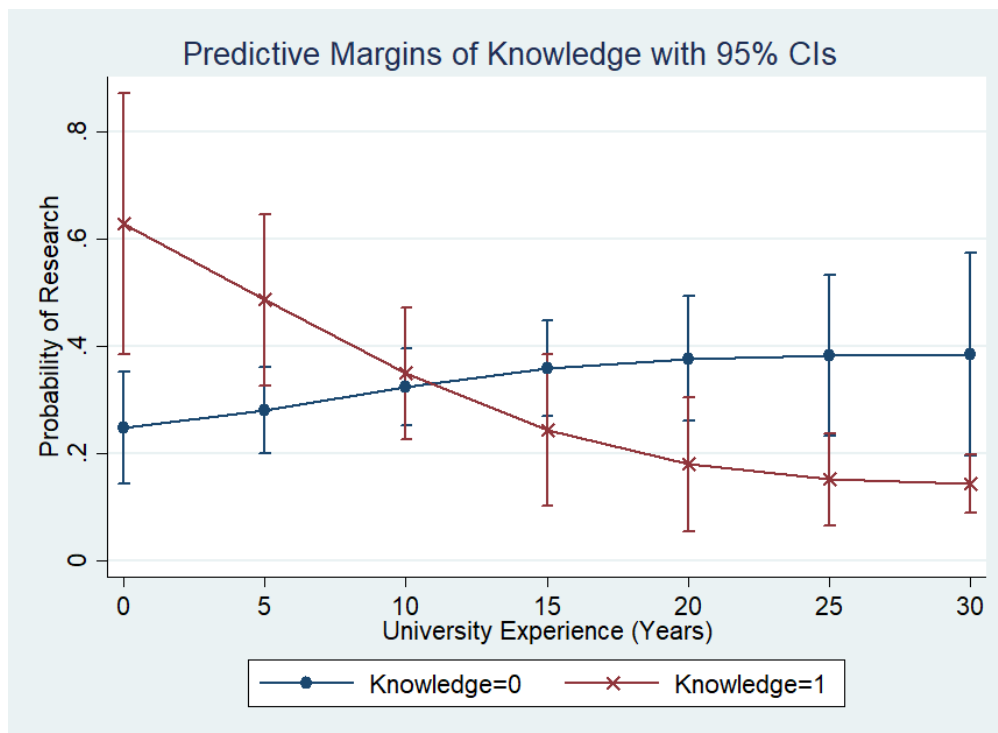


Figure 9. Marginal Effects of Applied Research in Terms of Years of Experience Differentiated by Knowledge of Funding Application

We further estimated the Logit model using the same dependent and explanatory variables to examine the robustness of our results. Results are reported in Appendix 2. Results of the estimated coefficients using the logit model are almost identical to those using the probit model in terms of magnitude and significance. As noted in Appendix 3, the correlation coefficient between logit and probit predicted probabilities is 0.9998 confirming the similarity of results between both models. In majors that are not familiar with odds ratios, the probit model is more commonly used for regression analysis when the dependent variable is binary (Daniels & Minot, 2020).

## 5. Conclusion

This study was designed to investigate the factors that have an impact on conducting applied research in the

higher education institutions in the Kurdistan Region of Iraq. This study also determined the main challenges that researchers face while conducting applied research and what is required to be available from resources and facilities for a better engagement of academic researchers in doing applied research. A questionnaire was designed to collect data and different social media platforms were used to reach researchers from different institutions in the Kurdistan Region of Iraq. More than 300 researchers contributed to the survey but only responses from 235 of them were used in the analysis due to missing some information. The probit model was used to calculate the impact of each factor on the probability of conducting applied research.

The result showed that knowing how to apply for external funding is the only binary variable that increases the likelihood of conducting applied research. It was expected that the years of experience might have a



positive and statistically significant impact on the probability of conducting applied research. Therefore, the impact of this variable was further investigated by interacting it with each of the funding availability and the Knowledge of researchers on a funding application. It was noticed that the probability of conducting applied research increases as the years of experience increase while the researcher has external funding to fuel the cost of the research. In contrast, the probability of conducting applied research decreases as the years of experience increase while the researcher has only the knowledge of how to apply for external funding.

The rate of researchers' participation in our study is low in most universities which may consider the limitation of this paper. We noticed that academics are not interested in participating in a survey if the study is not conducted by their university. The findings of this study recommend that the quality assurance department at each university conduct an annual mandatory survey for its academic staff at the end of each academic year to detect the challenges that face researchers while conducting academic research at universities. There are also some routines and extreme regulations that need to be modified as they consider irrelevant constraints that sometimes prevent academics from doing research conveniently. It is also recommended that the universities train their academic members on conducting academic research and acquiring external funding through seminars and workshops offered by the pedagogy centers at each university. This limitation provides a direction for future research. As an extension to this study, it would be quite interesting if future research differentiates between universities in terms of having explicit and sustainable policies in support of research to acquire a clearer view of the opportunities and challenges that face academics in conducting scientific research.

#### Author Contributions

All authors listed contributed substantially to this project and manuscript. All authors conceived and designed the study and assembled the data. RM performed the data analysis and made the first draft of this manuscript. SM, SR, and EK reviewed and edited the manuscript and made substantial contributions to writing the manuscript.

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**Appendixes**

Appendix 1: Survey on Conducting an Applied Research in the Higher Education Institutions in the Kurdistan Region of Iraq

Dear Colleagues,

This questionnaire is conducted by the Pedagogy group at Duhok and Zakho universities as a part of the development project (KRG II - Pedagogical Training for Professional Teacher Development) program with the Hamk University of Applied Sciences in Finland.

The only objective of this academic study is to investigate the variables that have a significant impact on conducting applied research to introduce opportunities/challenges that face academics on conducting applied research in higher education institutions in the Kurdistan region of Iraq. Please remember that your response will remain confidential and will be used only for the purpose of this study.

In case you have any questions regarding the survey, please call one of the team members:

Dr. Rezgar: (0000)000-0000

Ms. Edi: (0000)000-0000

Ms. Snober: (0000)000-0000

Ms. Shler: (0000)000-0000

Thank you very much for your time.

Email:

Q1) College/University:

Q2) Years of Experience at the University:

Q3) Degree (Master / PhD):

Q4) Department:

Q5) Have you conducted an applied research in your institution? (Yes / No)

Q6) Did you get any funds to conduct any of your applied research? (Yes / No)

Q7) Have any of your applied research being used by a relevant client? (Yes / No / I don't Know)

Q8) What was your motivation for conducting your last applied research? (Get a proposal from a client / Academic promotion / Get an offer from a colleague to collaborate / Other)

Q9) What percentage of your research is applied research? (If your answer is 1 out of 2, it means 50%).

Q10) Do you know how to apply for an external fund? (Yes / No)

Q11) How many times did you apply and get a fund for your research?

Q12) Did you get any reward/appreciation letter for doing any of your applied research? (Yes / No)

Q13) Have you shared the results/findings of your applied research with the relevant client? (Yes / No)

Q14) Was your last research an individual work? (Probably the answer is NO if you collaborated with someone else) (Yes / No)

Q15) How closely does your department work with the community in terms of the research proposal? (Always work with the community / Usually work with the community / Sometimes work with the community / Rarely work with the community / Never work with the community)

Q16) Do companies or any relevant agency interested to bring their problems as proposals to researchers at your department? (Extremely interested / Somewhat interested / Not so interested / Not at all interested)

Q17) Which of the followings would you need to be able to conduct the applied research? (select all that apply) (Money / Colleague or department collaboration / Resources / Regulations / Facilities / Other)

Q18) Please share any other (concerns, complaints, suggestions and /or questions) regarding the questionnaire.

Appendix 2: Robustness Checks using Results from the Logit Model

Dependent Variable: Research	Coefficient	Robust Std. Err.	z	P>z
Constant	-1.165**	0.341	-3.42	0.001
Fund	-0.816	0.783	-1.04	0.297

PhD	-0.085	0.349	-0.25	0.806
Collaboration	0.321	0.313	1.02	0.306
Knowledge	1.688**	0.631	2.68	0.007
Experience	0.001	0.024	0.03	0.979
ExpFund	0.226**	0.074	3.04	0.002
ExpKnow	-0.158*	0.069	-2.29	0.022
Number of observations = 235		Wald chi2(7) = 25.21		
Log of pseudolikelihood = -137.223		Prob > chi2 = 0.0007		
** and * indicate significance at 1% and 5% levels, respectively.				

### Appendix 3: Correlation between Logit and Probit Predicted Probabilities

	plogit	pprobit
plogit	1.0000	
pprobit	0.9998	1.0000

### العوامل المؤثرة في أداء البحث التطبيقي: أدلة من جامعات إقليم كردستان العراق

#### الملخص:

إن معرفة ما يؤثر على الباحثين في إجراء البحوث التطبيقية في البلدان النامية هو أمر مهم لوضعي السياسات في مؤسسات التعليم العالي. استخدمت هذه الدراسة منهجاً كمياً للتحقق في العوامل التي تدفع الأكاديميين في مؤسسات التعليم العالي في إقليم كردستان العراق إلى إجراء البحوث التطبيقية. لهذا الغرض، استخدمت استمارة الاستبانة لجمع البيانات عن باحثين في مجالات مختلفة من جامعات مختلفة، ثم تم تحليلها باستخدام نموذج بروبيت (Probit Model) بناءً على النتائج الرئيسية لهذه الدراسة، تزداد احتمالية إجراء البحوث التطبيقية مع زيادة سنوات الخبرة إذا امتلك الباحث تمويل خارجي، بينما تقل الاحتمالية مع زيادة سنوات الخبرة عندما يمتلك الباحث فقط المعرفة بكيفية التقديم للتمويل الخارجي دون وجود أي تمويل متاح بالفعل. توصي هذه الدراسة ببعض الإجراءات التي تساعد في تعزيز مجال البحث في مؤسسات التعليم العالي في إقليم كردستان العراق.

**الكلمات الدالة:** بحث تطبيقي، تمويل خارجي، نموذج بروبيت، سنوات الخبرة.

### فاكتهريين كارتيتكرني ل نه نجامدان فه كولينين پراكتيكي دهن: گرؤفه ژانكوئين ههريما كوردستانا عيراقى

#### پوخته:

زانينا وان فاکتھريين كارتيتكرني ل فه كوله ران دهن بو نه نجامدانا فه كولينين پراكتيكي ل وه لاتين پاشفه مایي يا گرنگه بو خودانين برياري ل ده زگه هين خاندنا بلند، في فه كولينين په يره وه كي چه نداتي بكار ئينايه بو دانه نياسينا وان فاکتھ ران كو نه كاديميا پال دهن ل ده زگه هين خاندنا بلند ل ههريما كوردستانا عيراقى بو نه نجامدانا فه كولينين پراكتيكي، ژ بوي في ئارمانجي فورما پيزانينان بو كومكرنا داتايان ل سه ر فه كوله ري جودا ل زانكوئين جودا هاتيه بلافكرن، و برييا موديلي بروبيت هاتينه شروقه كرن، ل دووف نه نجامين سه ركي بين فه كولينين، شيانا نه نجامدانا فه كولينين پراكتيكي بلند دبیت ل گه ل بلند بوونا ساليين شاره زايي نه گه ر فه كوله ري ژنده ري پاره داني بي دهره كي هه بيت، لي شيان كيم دبن ل گه ل زنده بوونا ساليين خزمه تي (شاره زايي) نه گه ر تني فه كوله ري پيزانين هه بن ل سه ر بده ستفه ئينانا پاره دانا دهره كي بي كردار، فه كولين هنده ك پيزابوونان پيشنيار دكه ت كو هاريكاريا نه نجامدانا فه كولينان دكه ت ل ده زگه هين خاندنا بلند ل ههريما كوردستانا عيراقى.

**په يقين ده ست پيكي:** فه كوليننا پراكتيكي، پاره دانا دهره كي، موديلي بروبيت، ساليين شاره زايي