

# The Effect of Research Efficacy and Perceived Financial Condition on Research Productivity among Faculty Members

Fitrawaty, Gaffar Hafiz Sagala, and Indra Maipita

Faculty of Economics, Universitas Negeri Medan, Indonesia,

**Abstract.** This study aims to examine 1) the effect of research efficacy and financial conditions on research grants; 2) the impact of research efficacy and perceived financial conditions on scientific publications; 3) the impact of research efficacy and perceived financial conditions on book publications. This research was conducted at the Faculty of Economics, Universitas Negeri Medan. The study population was active lecturers at the Faculty of Economics Unimed, and samples were taken by random sampling technique. The unit of analysis in this research is the individual. From 105 active lecturers at the Faculty of Economics Unimed, researchers received 46 responses to be analyzed. The data of this study were collected using a questionnaire with survey methods. The results revealed that the research efficacy and perceived financial conditions only affect the research grant. While in article publication, only research efficacy has an influence on it and for book publications, both research efficacy and perceived financial conditions, do not have a significant effect. These findings indicate that although on the same agenda, namely research, research grants, article publications, and books have different task characteristics. This study provides recommendations related to the evaluation of incentive schemes and financial guarantees associated with the three research tasks according to the characteristics and weight of the task.

**Keywords:** Management · Human Resource · Higher Education · Research Productivity

## 1 Introduction

Research is an integral part of the academic task of a lecturer. The implementation of research is the responsibility of the lecturer in his profession as a scientist. In Indonesia, according to the Ministry of Research, Technology and Higher Education issues Minister Regulation no. 20 of 2017 and Credit Score Assessment Operational Guidelines of 2019, for Promotion to the next level of lecturer academic position, research is the tricky part because of its strategic value in terms of promotion and conditions to get professional allowances. Thus the strategic position of lecturers as researchers has become more competitive lately (See: Eagan Jr. & Garvey, 2017; Fairweather, 2017; Potter, Higgins, & Gabbidon, 2011). Interestingly, the challenge becomes a polemic in academic circles (Eagan Jr. & Garvey, 2017). Moreover, the research productivity variables themselves are quite varied such as research grants,

publication of scientific articles, and publication of research results books, which are these variables have their own values and challenges.

Research grants are a research agenda that is complemented by sufficiently interesting funding. Therefore the competitiveness of the research agenda is quite hard, although the outcomes collected from these grants are increasingly competitive (See: Dunder & Lewis, 1998; Edwards & Roy, 2017). On the other hand, scientific publications and books at a certain level have a high level of difficulty and are often avoided by faculty members. Whereas, article and book publications are timeless works that can emphasize the academic value of an academic. Besides, publication in reputable journals or publishers is a condition for academic promotion at a certain level nowadays. So that, in turn, faculty members can no longer avoid those research agenda. In this phenomenon, there is a tug-of-war of utility in the preferences of lecturers related to the priority of the research agenda, both in the productivity of grants or articles and books publication. Referring to the Utility Maximizing Theory, an academic will leave certain activities if he feels there are other activities that give him higher utilities (Kwiek, 2016; Svein, 1990).

Recent study aims to examine 1) the effect of research efficacy and financial conditions on research grants; 2) the impact of research efficacy and perceived financial conditions on scientific publications; 3) the impact of research efficacy and perceived financial conditions on book publications. Research efficacy and perceived financial conditions were chosen as independent variables and were the main focus of this study because research is indeed very closely related to economic motives and scientific motives or academic passion. Edwards & Roy (2017) indicate that economic motives are even feared would lead lecturers to non-ethical actions. But on the other hand, economic motives can also trap lecturers in unproductive situations so that they are not only stagnant in their careers, but these situations also make faculty less dynamic. However, this study no longer measures economic motives, but the perceived economics condition of lecturer that might affect its action in conducting research, scientific publications, or writing books.

Furthermore, the efficacy of the study is used to review how far the lecturer can develop, carry out, and report research as a variable that synergizes with economic conditions in influencing research productivity (Hemmings & Kay, 2009). Self-efficacy is more than just competence, it is the belief that an individual has to perform certain tasks so that he can achieve the objectives of the task (Bandura, 1986). Thus, lecturers with research efficacy ideally have excellent expertise in carrying out research grants, scientific publications, and writing books (See: Hemmings & Kay, 2009).

## 2 Theoretical Framework

### *Research Efficacy*

Self-efficacy is a crucial construct of Bandura's Social Cognitive Theory (SCT) (Bandura, 1986). SCT argue that the environment is shaped by human ideas and actions, while the cognitive role is to motivate these ideas and actions Bandura (1986). Referring to self-regulation (Bandura, 1990), a person cannot control his motivation

and actions well if he does not pay enough attention to the performance to be done, how to do it, and how it impacts after the performance is implemented. Self-confidence in the efficacy forms the goal-setting sub-function of self-regulation (Bandura, 1990). In other words, people with high efficacy tend to set higher goals for themselves and are increasingly committed to these goals (Bandura, 1990, 1991) (Bandura, 1991a; Bandura, 1991b; Locke & Latham, 1990; Wood & Bandura; 1989). Hemmings dan Kay (2009) explain that self-efficacy refers to a person's ability to organize and implement actions to achieve a certain level of performance. Self-efficacy determines human perception about the cause of a failure (Bandura, 1991, 1993). Individuals with high self-efficacy tend to assume failure comes from lack of effort, while individuals with low self-efficacy will consider failure due to lack of capability (Bandura, 1993). The concept can also be associated with the argument of Major & Dolly (2003) which states that academic staff in Higher Education must be able to view themselves as teaching staff and researchers who can complete their various responsibilities. Then, the work responsibilities of a faculty member are no longer oriented towards capabilities but rather efforts that should be expended. It means that the implications of the belief in self-efficacy are the ones that produce high-performance actions..

Belief in self-efficacy produces a variety of effects such as: how people feel, think, motivate themselves, and behave through four main processes, namely: cognitive processes, motivation, effective, and selection (Bandura, 1993). Thus, it is understood that a person makes a causal contribution to his function through the mechanism of personal agency (Bandura, 1993). Among agency mechanisms, there is nothing more central or pervasive than people's beliefs about their ability to control the level of functions and events that affect their lives (Bandura, 1993). In conducting research, for example, a person will undoubtedly control his actions to focus on information related to the research activity itself. Individuals with high belief will construct themselves with activities that build their capabilities in researching. Various agency processes produce basic abilities that affect the function of lecturers as researchers. For example, sub-constructs 1) reviewing article and 2) broad view of research (Hemmings & Kay, 2009), as a basic ability, of course, is obtained based on the mastery of knowledge and experience of the implementation of knowledge in research, both aspects of theoretical study, research methodology, and data analysis. Furthermore, the ability to review articles and the breadth of views in research will contribute causally to the capability function, which is to conduct or develop research and report and supervise research. Thus lecturers with high research efficacy should also have high research productivity in the form of research grants, article publications, and books.

#### *Perceived Financial Condition*

Brewer et al. (1999) , in their research, found that financial assistance is a crucial element for training the productivity of faculty member research. In the discussion, Brewer et al. (1999) suggested that financial aid can provide financial security so that a faculty member can focus on his research assignments and put aside other tasks outside of academic activities. In this situation, it can be understood that financial security is a key instrument for anyone to be able to focus on a particular job.

Furthermore, Bernales (2006) in Quimbo & Sulabo (2014) offers aspects that must be considered to improve the productivity of faculty member research, namely time, belief, faculty involvement, positive working climate, organizational communication,

decentralized research policy, research funding, and clear institutional policy regarding research benefits and incentives. These aspects show that faculty members need time, a conducive work environment, clarity, and a guarantee of regulations regarding the benefits of functional research to stakeholders and researchers as well as financial benefits (Quimbo & Sulabo, 2014).

On the other side, Conklin & Desselle (2006) reviewed the exogenous constructs in influencing research productivity with the terminology of quality of work-life built with hours spending in research activities, research and teaching self-efficacy, and stress-related to fulfilling academic roles. In this view, it appears that work conduciveness and self-efficacy are the main instruments in the study of Conklin & Desselle (2006). But the construct only forms intrinsic motivation from faculty members. While in the body of an individual must need to be motivated extrinsically and must be accommodated in efforts to manage human resources. In this case Schroen, Thielen, Turrentine, Kron, & Slingsluff, (2007) are of the view that although research is the existence of scientists of high academic value, financial incentives, and other rewards are deemed necessary to align with these academic activities. So that all research activities must indeed have a guaranteed incentive scheme in all academic missions (Schroen et al., 2007)

In the discussion above, we can understand that financial security is an essential aspect for individuals to be able to work well even though research is basically an integral part of faculty members that must be carried out continuously to improve their capabilities in teaching and serving the community. However, financial guarantees are directly related to the comparability of workloads and rewards and the guaranteed quality of life of faculty members in carrying out their lives with their families. In this study, we use the construct of perceived financial condition as a proxy for financial guarantees that are perceived in an individual's mind. We measure perceived financial condition with faculty member perceptions of the adequacy of their income for their monthly living cost and the appropriateness of their income with the workload, including teaching, research, and community service. Thus we can capture the phenomenon from the basic perceptions held by lecturers and researchers to recommend strategic policies by shaping these fundamental aspects.

### 3 Method

This research was conducted at the Faculty of Economics, Universitas Negeri Medan. The study population was active lecturers at the Faculty of Economics Unimed, and samples were taken by random sampling techniques (see: Sekaran & Bougie, 2016). The unit of analysis in this research is the individual. From 105 active lecturers at the Faculty of Economics Unimed, researchers received 46 responses to be analyzed. Data for all research variables in this study were collected using a questionnaire with survey methods. Survey is a measurement process used to collect information in a well-structured interview, with or without the interviewer (Cooper, Schindler, & Sun, 2006). The survey in this study was carried out with the help of electronic forms. Collecting data is done by sending questionnaires via private messages to each respondent. Completing the questionnaire is voluntary to maintain the independence of the response given by the sample. The research instrument was adapted from Hemmings dan Kay

(2009). The instrument was designed with a Likert scale (5-scale) like most survey studies. Likewise, before the data collected is further analyzed, the validity and reliability of the research instruments are tested first (Cooper et al., 2006; Sekaran & Bougie, 2016).

#### 4 Result

The demography of the sample in this study shows that male is the majority with 69,57% and female 30,43% of all respondent. Its condition indeed represents the actual condition of the population. In the age category, this study separates the sample into below 45 years old and above 45 years old because 45 years old is the median number of samples. Researchers found respondent was separate equally among those two conditions. Furthermore, in an academic position, the respondent only exists in three categories of an academic position, that is Assistant Professor, Lecturer, and Associate Professor. The assistant professor consists of 10 respondents or 21,74%, while the lecturer consists of 22 respondents or 47,83%, and the Associate Professor consists of 14 respondents or 30,43%. Finally, in marital status, respondent was separated into four conditions, that is Single which includes five respondents (10,87%), Married which consists of 21 respondents (45,65%), Married with children which consists of 18 respondents (39,13%), and divorce which includes of 2 respondents (4,35%).

**Table 1.** Demography of Sample.

Demography		n	%
Gender	Female	14	30,43
	Male	32	69,57
	Sum	46	100
Age	Below 45	26	56,52
	Above 45	20	43,48
	Sum	46	100
Academic Position	Assistant Professor	10	21,74
	Lecture	22	47,83
	Associate Professor	14	30,43
	Sum	46	100
Marital Status	Single	5	10,87
	Married	21	45,65
	Married with Childern	18	39,13
	Divorce	2	4,35
	Sum	46	100

Furthermore, researchers identified in a brief the condition of respondents using descriptive statistics. Descriptive statistics show the number of mean and standard deviation. With the plain analysis, we found there is a slight difference between the number of publications on gender and age factors according to mean and standard deviation. But interestingly, the number of standard deviation shows a substantial

weight. It indicates the respondent has a gap in productivity. Furthermore, on the academic position, researchers found the significant differences in the number of article publication productivity between Lecturer, Assistant Professor, and Associate Professor, while in another factors we have not found a valuable difference according to the mean number. The last factor, marital status, also shows the productivity between categories is quite similar.

**Table 2.** Descriptive Statistics.

Factors		N	Mean	Std. Dev.
Gender				
Research Grant	Female	14	2,071	1,491
	Male	32	3,093	2,751
Article Publication	Female	14	6,142	7,969
	Male	32	5,968	8,902
Book	Female	14	0,642	0,633
	Male	32	0,625	1,313
Ages				
Research Grant	<45	26	2,769	1,903
	>45	20	2,8	3,105
Article Publication	<45	26	6,192	9,397
	>45	20	5,8	7,515
Book	<45	26	0,461	0,646
	>45	20	0,85	1,565
Academic Position				
Research Grant	Lecturer	28	2,80	1,39
	Assistant Professor	52	2,36	2,22
	Associate Professor	48	3,43	3,32
Article Publication	Lecturer	110	11	14,14
	Assistant Professor	59	2,68	2,12
	Associate Professor	108	7,71	8,11
Book	Lecturer	3	0,3	0,48
	Assistant Professor	12	0,54	0,67
	Associate Professor	14	1	1,84
Marital Status				
Research Grant	Single	14	2,80	0,83
	Merried	58	2,76	2,58
	Merried with Childern	44	2,44	2,38
	Divorce	12	6,00	4,24
Article Publication	Single	19	3,8	3,19
	Merried	131	6,24	10,26
	Merried with Childern	111	6,17	7,56
	Divorce	16	6	11,33
Book	Single	2	0,4	0,55
	Merried	7	0,33	0,48
	Merried with Childern	19	1,05	1,66
	Divorce	1	0,5	0,71

This study uses multiple regression in testing phenomena and achieving research objectives. Regression analysis was performed three times to review the difference in influence between the three dependent variables with the same independent variable. Three times of testing is done because of the limitations of the regression analysis tool

that only allows done with one dependent variable (see: Field, 2009). Meanwhile, testing with Structural Equation Modeling (SEM) is not possible because of the limited number of samples that do not meet the criteria to be tested with SEM. Thus this study conducted three tests and observations made by reviewing the regression coefficient and its significance. So that researchers can observe variations in the phenomena between these variables. The independent variable in this study consisted of research efficacy and perceived financial condition while the independent variable consists of productivity research grants, article publications, and books.

**Table 3.** ANOVA Result.

Model	Sum of Squares	df	Mean Square	F	Sig.
Dependent Variable: Research Grant					
Regression	46,732	2	23,366	4,424	.018**
Residual	227,095	43	5,281		
Total	273,826	45			
Dependent Variable: Article Publication					
Regression	201,890	2	100,945	1,409	.255
Residual	3081,088	43	71,653		
Total	3282,978	45			
Dependent Variable: Book Publication					
Regression	3,213	2	1,607	1,245	.298
Residual	55,504	43	1,291		
Total	58,717	45			

**Table 4.** Coefficients.

Model	Unstd Coef.		Std. Coef.	t	Sig.
	B	Std. Error	Beta		
Dependent Variable: Research Grant					
(Constant)	-3,968	2,334		-1,700	0,096*
Research Efficacy	0,059	0,032	0,263	1,845	0,071*
Financial Condition	0,449	0,242	0,265	1,861	0,069*
Dependent Variable: Article Publication					
(Constant)	-5,619	8,597		-0,654	0,517
Research Efficacy	0,197	0,118	0,253	1,671	0,102*
Financial Condition	-0,191	0,890	-0,032	-0,214	0,831
Dependent Variable: Book Publication					
(Constant)	-0,538	1,154		-0,466	0,643
Research Efficacy	0,025	0,016	0,237	1,560	0,126
Financial Condition	-0,069	0,119	-0,088	-0,579	0,565

The result of F-test on the regression model shows that of the three models tested only the first model with the dependent variable Research Grant has a high significance rate of 0.018 ( $<0.05$ ), while the other two models do not have high significance even at the



$\alpha$  level = 10%. This finding is quite interesting because it shows that the Research Grant has a unique attraction for faculty members at the Faculty of Economics Unimed compared to Article Publication and Book.

Furthermore, the results of the regression test show that perceived financial condition and research efficacy has a positive and significant effect on the Research Grant with at  $\alpha = 10\%$ . The impact of the research efficacy on the research grant has a number of  $t = 1.845$  and  $p\text{-value} = 0.071$ , while the effect of perceived financial condition on the research grant has a value of  $t = 1.861$  and  $p\text{-value} = 0.069$ . It indicates that the perceived financial condition and research efficacy can trigger faculty members in conducting research in the form of grants.

Furthermore, researchers found that research efficacy has significant impact on article publication with  $p\text{-value} < 0.1$  ( $\alpha = 10\%$ ), but perceived financial condition has no impact on article publication with  $p\text{-value} = 0.831$ . These findings indicate that the productivity of article publications has different characteristics from the productivity of research grants. With the similar sample, the perceived financial condition have no impact on the productivity of article publication. Interestingly, in the third model, with the dependent variable productivity of book publications, no positive and significant effect of research efficacy and perceived financial condition was found on book productivity. In the third model, it is also indicated that the book is a product that is more unique than the other two variables, namely the research grant and the publication of articles because the two independent variables that are offered in no way can be an explanation of the productivity of book publications.

Overall, the research grant does have a financial appeal that article and book publications do not have. Therefore, economic motives certainly become sufficient drivers for faculty members to be involved in a research grant. Meanwhile, research certainly has scientific principles that must be carried out. In submitting a research proposal, implementing, and reporting research, a faculty member certainly requires expertise in arranging a study according to the rule of thumb. Therefore, a faculty member must have research efficacy to be able to win a grant, implement it, and report it. If not, he will not be able to win the grant, or if he earns, he will be constrained by the implementation and reporting.

Under certain conditions, scientific articles and books are part of the outcome of a research grant even though it does not apply to the whole award. But likewise, it turns out that scientific publications and book publications have different characteristics and cannot be explained with the same dependent variables as a research grant. In the publication of articles, research efficacy is needed in the faculty members. But referring to Becker, Kernan, Clark, & Klein (2015) that there is a commitment to carrying out tasks such as writing scientific articles. The position of commitment also needs to be explained, whether as a commitment to the institution, or commitment to the profession.

On the other hand, Brew (2001) also explains that the activity of writing articles is conceptually varying in lecturer preferences. This relates to the utility of these activities for the lecturer. Interestingly, in Indonesia, before the issuance of Permenristikdikti No. 20 of 2017, the publication of scientific articles did not have rigid criteria and conditions. So the reference for faculty members is the credit score of a publication regardless of its social index or journal reputation. Such an environment places the lecturer in a comfort zone and is not pressured by particular demands so that the publication of articles has less desirable value. It might answer the research findings in the second model. However Permenristikdikti no 20 2017 regulates publication criteria



for certain academic position levels as a form of reward and punishment for faculty members related to the provision of professional allowances. With this regulation, the value of article publications should be better and trigger lecturers to increase their productivity, although, at this time, lecturers are still adapting to these regulations so that positive associations between perceived financial conditions and scientific article productivity as well as book publications are not yet visible.

## 5 Discussion

Previous research has discussed the association of tenure and promotion policy with research productivity (Hasselback, Reinstein, & Schwan, 2000) and tested the lecturer performance evaluation format that links research performance as a condition for obtaining tenure and promotion (see: Cattaneo, Meoli, & Signori, 2014; Leisyte, 2006). Tenure and promotion itself contain two main values, namely career path, and financial benefits for faculty members. That concept also seems to apply in the Ministry of Research, Technology, and Higher Education issues Minister Regulation no. 20 of 2017 and Credit Score Assessment Operational Guidelines of 2019 for Promotion of Lecturer Academic Position. In respond to these policies and arrange further policies at the institutional and faculty level, this study seeks to analyze variations in the efficacy of research and perceptions of the financial condition of lecturers in their effects on publication productivity. The capture of the phenomenon in the model will indicate the lecturer's response to the Minister Regulation and Credit Score Assessment Operational Guidelines above and provide a basis for decision making and policy for the faculty to encourage lecturer research productivity.

The results revealed that the research efficacy and perceived financial conditions only affect the research grant. While in article publication, only research efficacy has an effect on it while not for perceived financial conditions. And for book publications, both of research efficacy and perceived financial conditions, did not have a significant effect. These findings indicate that although on the same agenda, namely research, research grants, article publications, and books have different task characteristics. In conducting the research grant, besides the research assignment, there are financial benefits inherent in it in the form of funding, while the publication of articles and books does not always have economic benefits. Although in a years later publication of articles and books is required to become mandatory outcomes from a research grant. But from the results of this study, we can understand that the three research products have different natures. So that the treatment of the three should be different too.

Research efficacy itself is seen as a vital instrument in the productivity of research because the construct is in the individual, which then moves the individual to be able to conduct research according to scientific principles. In this study, this is evident from the effects on the research grant and article publication. These findings are certainly in line with the findings of Conklin & Desselle, (2006) and Hemmings & Kay, (2009). Faculty members are not allowed to have any research efficacy because that is the basis for someone to be able to move themselves to develop proposals, implement them, and report according to academic rules and regulations. An initial impulse is needed to be born in an individual in the form of belief because research is not a simple thing but a

complicated and lengthy aspect so that it requires more than just knowledge, but also commitment, determination, patience, and consistency throughout the study.

Moreover, the publication of articles must go through a process of submission, double-blind review, revision, both from the aspect of introduction, literature review, methodology, statistical tools, discussion, readability, etc. so that an article is worthy of publication in a particular journal. The process is unpredictable in time so that it can take six months to two years for one article. Thus, it can also be understood that the publication of articles has a different nature from research grants that may be completed according to the contract date with a certainty of time and financial benefits.

However, to encourage the productivity of the publication of articles and books, the institution needs to review the incentive schemes and financial guarantees that already exist with the level of effort that must be spent by a faculty member in producing an article and book publication. This view is in response to the insignificant influence of financial conditions on the productivity of scientific articles and books. On the one hand, we can see that this influence is not significant because the productivity of articles and books is not determined by financial perception. But if we return to the Utility Maximizing Theory, which reveals that an academic will leave certain activities if he feels other activities give him higher utility (Kwiek, 2016; Svein, 1990). This means that if a faculty member feels that a research agenda is too heavy and is not commensurate with its financial benefits, he will move on to other agendas that may be outside the academic agenda and in certain situations he no longer feels that he has financial problems, but his academic agenda has not been concentrated anymore on actual research productivity becomes the core of his task. Thus, the institution must consider the strategy of distributing incentives or other financial guarantees to be able to control the faculty members' performance focus equally not only on the research grant but also the publication of articles and books.

From organizational perspectives, financial security given to faculty members will not actually be in worthless, but it will be an investment channeled to strengthen intellectual capital so that in turn faculty members will have superior and productive academic qualifications both in the implementation of research grants, publications articles, and books (see: Brewer et al., 1999). The productivity must be regarded as a return of investment (ROI). In this case, ROI indeed cannot be quantified with certainty because the value of intellectual capital and publication is indeed not easy to quantify monetarily. However, from the standpoint of investment for productivity, it is feasible to consider strategic decision making in tertiary institutions.

## 6 Conclusion

This study revealed that the research efficacy and perceived financial conditions only affect the research grant. While in article publication, only research efficacy influences it, and for book publications, both research efficacy and perceived financial conditions, do not have a significant effect. These findings encourage the institution to develop a more appropriate policy to motivate faculty member regarding research productivity, in particular article and book publication. The form of policy needs to be concerning the value of publication referring to the worthy of benefit and the weight of effort. It's being important because research grants, article publications, and books have different

task characteristics, effort, value, time spending, and form of financial benefit. The higher education needs to analyze the appropriate scheme of research tasks also its benefits and incentives then develop a suitable policy.

Further research can develop the draft of policy or evaluation form for measuring research performance among faculty members using research and development or experimental method. It will bring much of academic insight in this field of study.

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