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The implementation of outcome-based education: Evidence from master program in economic management at Hanoi universities

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A B S T R A C T

The objective of this study is to investigate the factors that affect the implementation of outcome-based education (OBE) in the master program in Economic Management. A research framework was proposed to investigate the relationship between the factors including professional knowledge, the ability to detect and solve problems, team work and communication skills, work attitude with students' perceived value and these factors with practical application ability. A questionnaire was administered to a sample of 388 graduate students of economic management at different universities in Hanoi, Vietnam. The partial least squares structural equation modelling (PLS-SEM) method was utilized to test the hypotheses of this research. The study findings show that professional knowledge, the ability to detect and solve problems, team work and communication skills and work attitude had direct impacts on students' perceived value; and students' perceived value had a direct impact on practical application ability of Economic Management's program in work. The findings also indicate that professional knowledge did not have any direct impact on practical application ability of Economic Management's program in work and the ability to detect and solve problems only had indirect impact on practical application ability through the moderator of students' perceived value. It is stressed the importance role of students' perceived value; and when students understand that the program benefits and they provide knowledge and skills effectively in practice.

1. Introduction

In country developing process, higher education is considered as a key to improvement the human resource quality. In Vietnam, the process of education and training reform has been setting new requirements for all levels of national education system. However, it is shown that in many Vietnamese universities, the program content is still heavy on theory, it has not been closely linked to the socio-economic life; not yet strongly shifting to training according to social needs; has not focused on life skills education, promoting the creativity and practical capacity of students. In fact, the development of training programs of universities in Vietnam has not been properly focused, there are not many schools investing in this work and the curriculum of the same sector often has the same subjects. The characteristics of some schools are based on teaching subjects which have nothing to do with society and learners' need; some schools are too focused on theory; some schools are too focused on practical skills and no solid knowledge base. The training program does not keep up with the development, i.e., it does not meet the requirements of society and there is a shortage of people who have received intensive training on program development. Outcome-Based Education has become more important in recent years and it is indeed the key to a meaningful education and the focus on learning outcomes is essential to inform diagnosis and improve teaching processes and student learning. Biggs and Collis (2014) confirm that it has been viewed as a significant paradigm shift in educational philosophy and practice

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which underscores a learning based model focusing on what students know and can do as a result of a learning experience or acquiring a degree as opposed to a teacher centered model that emphasizes what is presented. Facing practical demands for developing an application-oriented training program to improve practical capacity, there is a need to apply economic theories into practice, especially in the context of Industry 4.0. It is necessary to improve the quality of training towards improving the practical performance of economic managers, especially senior economic managers. It must directly serve the country's economic development strategy in the long run and in the short run, ensuring a smooth transition and inheritance among economic management cadres, creating a source for economic management officials in the future, to ensure the country's economic development in the future. Outcome-Based Education in master's program is not a new model. However, in Vietnam, there is only one general type of masters, which is neither research nor application. The Higher Education Law (HEL), which came into effect in January 2013, stipulates that research and application training programs are separate. However, master's science will be very heavy, learners must focus on research and graduate thesis. The regulation states: For the research -oriented program, the program content consists of at least 60% of the time devoted to the knowledge block to improve scientific research capacity. At the application-oriented program, the volume of practical knowledge, improving practical activities accounts for at least 60%. The study is divided into two folds: the research orientation is a scientific work, making new contributions academically and theoretically, containing new and valuable knowledge for the increase of knowledge. Application-oriented is a technical, technological, or managerial report that addresses a practical issue in the field of research. Although OBE has been advocated for over 60 years and was revived in the 1980s; in Vietnam, it just advocated from 2013 after the Higher Education Law was implemented. However, there is a fact that the target trainees of Master of Economic Management Program are mostly civil servants, so training and retraining of professional qualifications and capacity for economic managers will give them the knowledge to solve the work, coordinate the activities of the junior staff and helps them have a general understanding about the development trend of society. At the same time, it will also help economic managers expand their awareness about modernization, directing to the world and directing to the future for economic management officials. Not only that, it also helps economic managers to analyze problems, generalize economic, political, and social issues to have solutions for all problems. In addition, it also makes economic management in professional, specialized, technical, and solid working experience. Being able to train good economic managers also means making them capable of managing including practical competencies in case analysis, decision making and problem solving, team competence. organization and command, capacity to sign and coordinate operations. There is, however, a substantial lack of research on Outcome-Based Education in higher education (Zlatkin-Troitschanskaia, Shavelson, & Kuhn, 2015). The purpose of this study is to analyze the factor that impact on the Outcome-Based Education in Master of Economic Management program in different Hanoi universities from the survey of student who graduated from this program.

2. Literature Review and Hypothesis Development

Higher education plays an important role in improving human resources for all nations and regions. Various studies on students' working capacity, university-business cooperation and how to provide training programs according to social needs have been conducted (Davies, Csete, & Poon, 1999; Jain, 2010; Sitko-Lutek & Jakubiak, 2012; Yen et al., 2009). In Vietnam, only 60% of students have jobs in accordance with their trained majors at universities. Many programs and syllabus are claimed as no longer appropriate, or even dangerous for the development of students in the contemporary society, especially at work and in life after graduation. Therefore, the gap between competencies required of graduates in organizations and knowledge traditionally transferred to students by universities in Vietnam should be measured in guiding educators and policy makers towards more efficient and effective education systems. Perceived value by the students refers to the overall evaluation of the utility of the service or learning tool and higher perceived value lead to satisfaction with the education (Ledden, Kalafatis, & Samouel, 2007). Given the characteristics of higher education service, in particular, the high level of individual involvement and its importance in current and future life of a student, it seems important to measure value perceived by the student through components (Alves, 2011). In this study, these components are professional knowledge, the ability to detect and solve problems (problem-solving ability), team work and communication skills and work attitude. Moreover, an outcome is a culminating demonstration of learning; it is what the student should be able to do at the end of a course. Outcome-based education is an approach to education in which decisions about the curriculum are driven by the exit learning outcomes that the students should display at the end of the course (Davis, 2003). The practical applicability of curriculum is reflected by professional knowledge, the ability to detect and solve problems (problem-solving ability), team work and communication skills, work attitude and perceived value (Lowden, Hall, Elliot, & Lewin, 2011). There is a broad understanding of what qualities, characteristics, skills and knowledge constitute employability for graduates. Employers expect graduates to have professional knowledge from their degrees but require graduates also to demonstrate a range of broader skills and attributes that include team-working, communication, leadership, critical thinking, problem solving and managerial abilities. Based on the above discussions, the following hypotheses are proposed.

H1: Professional knowledge (PK) has a direct impact on students' perceived value (PV).

H2: The ability to detect and solve problems (DSP) has a direct impact on students' perceived value (PV).

H3: Team work and communication skills (WCS) has a direct impact on students' perceived value (PV).

H4: Work attitude (WA) has a direct impact on students' perceived value (PV).

H5: Students' perceived value (PV) has a direct impact on practical application ability of Economic Management's program in work (PPA).

H6: Professional knowledge (PK) has a direct impact on practical application ability of Economic Management's program in work (PPA).

H7: The ability to detect and solve problems (DSP) has a direct impact on practical application ability of Economic Management's program in work (PPA).

H8: Team work and communication skills (WCS) has a direct impact on practical application ability of Economic Management's program in work (PPA).

H9: Work attitude (WA) has a direct impact on practical application ability of Economic Management's program in work (PPA).

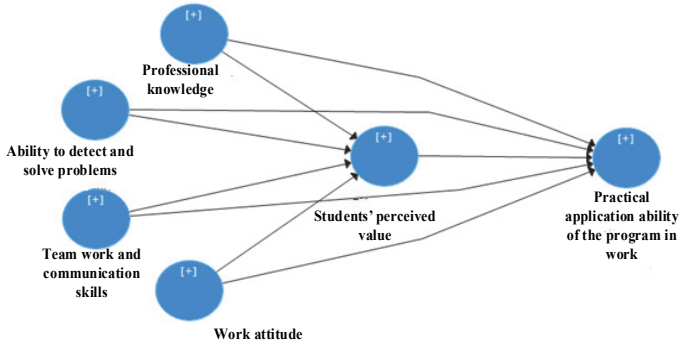

Fig. 1. Research framework

3. Research Methodology

3.1. Scales of Measurement

The data were collected in several successive steps. First, focus groups were conducted to explore the factors affecting students' perceived value and practical application ability of Economic Management's program among students that graduated from Economic Management's program. Next, focus groups pre-tested the questionnaire, and identified additional variables (that could affect the dependent variable) not present in the original survey instrument. A pilot survey was conducted, and reached 20 professors and managers in different universities including Dai Nam University, Hanoi University of Business and Technology, Thuongmai University, National Economics University in Hanoi, Vietnam. Then, the instrument was modified, once again, for the final survey (see Table 1). The questions were asked on a 5-point Likert scale: (1) Strongly disagree; (2) Disagree; (3) Neither agree nor disagree; (4) Agree; (5) Strongly agree.

3.2. Sample and Data Collection

The research was conducted with quantitative descriptive approach and the type of research empirical study supported by survey. The participants were recruited at random from various Vietnamese universities offering the master program in Economic Management. The nature of this research is explanatory research (explanatory research) that aims to describe and explain the nature of an ongoing situation at the time of the study conducted and examined the causes of the symptoms. In order to get a high response rate, primary data were collected through two primary tools: online and offline. For online tool, data collection was accomplished through a questionnaire made available on the Google Forms platform. This enabled minimization of the costs on the part of the researcher and the company, and ease of reference and time convenience on the part of the management sample to which the survey was administered. The questionnaire in the survey has two parts. The first part was aimed at obtaining respondents' opinions regarding professional knowledge (4 items), the ability to detect and solve problems (4 items), team work and communication skills (5 items), work attitude (5 items), students' perceived value (3 items) and practical application ability of Economic Management's program in work (3 items). The second part was designed to collect demographic information, including gender, school, family background and type of current working activity. In order to get a high response rate, the survey was conducted in class before the lecture started. The survey took no more than 30 minutes to complete.

3.3. Data Analysis

Partial least squares structural equation modeling (PLS-SEM) method was adopted in the study. PLS-SEM is a statistical analysis of structural equation modelling which allows estimating complex cause-effect relationship models with latent variables. First, Cronbach alpha coefficients and item-total correlation were calculated. To be accepted, Cronbach´s Alpha were greater than 0.7 the item-total correlations were more than 0.3 (Hair, Anderson, Tatham, & Black, 1998; Nunnally & Bernstein, 1999). Then, Exploratory Factor Analysis (EFA) was used to ensure validity of the scale and to explore factor structure. KMO must be larger than 0.5. If KMO is lower than 0.5 is not suitable, exploratory factor analysis should not be performed. Total variance explained must be greater than 50% and the factor loading must be greater than or equal to 0.5 within a factor (Gerbing & Anderson, 1988). In order to test the research hypotheses, the OLS coefficients at the 5% significance level are used.

Table 1
The item measures

Factor	Item	Description	Source
Professional knowledge (PK)	PK1	Having the **ability** to **apply** the **knowledge of economic management effectively**	(Baruch & Leeming, 1996; Louw et al. , 2001; Murray & Robinson, 2001a; Neelankavil, 1994b)
	PK2	Having extensive knowledge and expertise in economic management	
	PK3	Having the Ability to inspect and control in work **effectively**	
	PK4	Proficiency in the work-related activities	
The ability to detect and solve problems (DSP)	DSP1	The understanding, analyzing and evaluating of social and political issues	
	DSP2	The ability to propose solutions to problems with high feasibility	
	DSP3	The ability to apply theory to practice	
	DSP4	Constantly **being updated with new knowledge** and ideas	
Team work and communication skills (WCS)	WCS1	Having good negotiation skills	
	WCS2	The ability to coordinate the activities within the organization	
	WCS3	Have good presentation and presentation skills	
	WCS4	Knowledge and **proficiency in foreign languages and IT skills in work**	
	WCS5	Having self-confidence **in the professional working environment**	
Work attitude (WA)	WA1	Obeying the laws of the state and the regulations of organization	
	WA2	Showing enthusiasm in the work	
	WA3	Willing to **regularly learn** from **colleagues**	
	WA4	Having high level of awareness	
	WA5	High and clear motivation	
Students' perceived value (PV)	PV1	The program **is worth with the time** spent.	(Akao et al., 1996; Davis et al., 2007; Neelankavil,
	PV2	Students' knowledge, skills and attitudes have had positive changes	
	PV3	Students have significantly contributed to the success of the organization	
Practical application ability of Economic Management's program in work (PPA)	PPA1	Students have successfully applied their knowledge to solving issues related to economic management.	(Dang Minh, 2018; Duoc & Metzger, 2007; Murray & Robinson, 2001b)
	PPA2	Students have made great progress in planning, organizing, directing, and controlling work activities	
	PPA3	Student is the **key member** of the **organization**	

4. Results

4.1. Demographic Statistics

A total of 450 questionnaires were delivered from December 2019 to May 2020, and 406 responses were returned, representing a response rate of 90.2%. After removing the invalid questionnaire, 388 valid questionnaires (86.2%) were obtained. Table 2 shows the demographic statistics of the data.

Table 2
Student demographic information

Student background		Frequency	Percentage	Cumulative percentage
Gender	Male	221	65.4	65.4
	Female	117	34.6	100.0
	Total	338	100.0	
Age	Below 25	49	14.5	14.5
	26 - 35	146	43.2	57.7
	36 - 45	109	32.2	89.9
	Above 45	34	10.1	100.0
	Total	338	100.0	
Job position	Staff	177	52.4	52.4
	Manager	161	47.6	100.0
	Total	338	100.0	
Experience (year)	Below 5	22	6.5	6.5
	5-10	50	14.8	21.3
	11 -15	152	45.0	66.3
	Above 15	114	33.7	100.0
	Total	338	100.0	
Type of work	Business	46	13.6	13.6
	Public sector	253	74.9	88.5
	Other	39	11.5	100.0
	Total	338	100.0	
Thesis grade (on a 10 scale)	Above 9.0	87	25.7	74.6
	8.5 - 9.0	165	48.8	48.8
	Below 8.5	86	25.4	100.0
	Total	338	100.0	
Studying period	2013-2015	60	17.8	17.8
	2014-2016	102	30.2	47.9
	2015-2017	93	27.5	75.4
	2016-2018	83	24.6	100.0
	Total	338	100.0	

4.2. Reliability and Validity Testing

In this study, the reflective model was utilized to ensure the reliability and validity of the construct measures and to provide support for the suitability of their inclusion in the path model. It is confirmed that manifest variables with outer loadings below 0.7 should be considered for elimination. If the elimination of these indicators increases the composite reliability, then they should be discarded. In this study, no observed variables were with outer loading below 0.7. Table 3 shows the results of reliability and validity test.

Table 3
The results of reliability and validity test

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Professional knowledge	0.896	0.899	0.927	0.762
The ability to detect and solve problems	0.889	0.889	0.923	0.750
Team work and communication skills	0.845	0.847	0.897	0.685
Work attitude	0.835	0.836	0.890	0.669
Students' perceived value	0.889	0.889	0.931	0.818
Practical application ability of Economic Management's program in work	0.857	0.860	0.913	0.778

To prove good reliability, the Cronbach's alpha reliability coefficients and composite reliability should be greater than 0.7 and the coefficients from the extracted variance analysis (EVA) should be at least 0.5. Table 2 shows the questionnaire to reach acceptable reliability. In a reflective model, composite reliability is a preferred alternative to Cronbach's alpha as a test of convergent validity composite reliability varies from 0 to 1, with 1 being perfect estimated reliability. In an exploratory model, composite reliabilities should be equal to or greater than 0.6. When modelling for confirmatory purposes, composite reliabilities should be equal or greater than 0.7, while 0.8 is considered good for confirmatory research. Table 3 also indicates that all composite reliability values are greater than 0.8. The convergent validity was evaluated from the measurement model by evaluating the factor loading greater than or equal to 0.7 which is preferred. Table 3 indicates that all factor loading values are greater than 0.7. Discriminant validity is the extent to which a construct is truly distinct from other constructs by empirical standards. The Fornell-Larcker criterion and the cross-loadings are checked for discriminant validity. According to the Fornell-Larcker criterion, the square root of the AVE of each construct should be higher than the construct's highest correlation with any other construct in the model. Cross-loadings are an alternative to AVE as a method of assessing discriminant validity for reflective models. When analyzing cross-loadings, each indicator's outer loading on a construct should be higher than all its cross-loadings with other constructs. Table 3 indicates that the square root of AVE is higher than the correlations among latent variables. Based on variance inflation factor (VIF) in Table 5, it is indicated that there is low correlation among variables under ideal conditions VIF<5. Moreover, the Heterotrait-Monotrait ratio of correlations (HTMT) are above 0.9.

Table 4
Reflective model analysis

	Professional knowledge	The ability to detect and solve problems	Team work and communication skills	Work attitude	Students' perceived value	Practical application ability
PK1	**0.843**	0.512	0.534	0.543	0.520	0.521
PK2	**0.902**	0.530	0.592	0.578	0.511	0.559
PK3	**0.867**	0.580	0.636	0.623	0.501	0.534
PK4	**0.878**	0.569	0.617	0.585	0.520	0.554
DSP4	0.561	**0.866**	0.582	0.528	0.534	0.545
DSP1	0.544	**0.877**	0.525	0.513	0.537	0.536
DSP3	0.509	**0.874**	0.532	0.530	0.518	0.525
DSP2	0.526	0.457	**0.761**	0.515	0.472	0.545
WCS1	0.539	0.535	**0.858**	0.549	0.502	0.507
WCS2	0.612	0.600	**0.875**	0.569	0.536	0.524
WCS4	0.600	0.536	**0.812**	0.552	0.507	0.535
WCS5	0.599	0.527	0.583	**0.818**	0.505	0.656
WA1	0.584	0.546	0.553	**0.809**	0.506	0.630
WA2	0.580	0.581	0.597	**0.805**	0.538	0.628
WA3	0.632	0.531	0.607	**0.840**	0.479	0.619
PV1	0.509	0.564	0.538	0.465	**0.903**	0.666
PV2	0.504	0.509	0.538	0.514	**0.918**	0.668
PV3	0.591	0.613	0.571	0.566	**0.893**	0.676
PPA1	0.518	0.517	0.524	0.610	0.615	**0.869**
PPA2	0.586	0.560	0.584	0.673	0.664	**0.910**
PPA3	0.521	0.558	0.541	0.568	0.646	**0.866**

Table 4 shows that all factor loading values are above 0.7, hence indicating model fit.

Table 5
Discriminant validity of the model

	Professional knowledge	The ability to detect and solve problems	Team work and communication skills	Work attitude	Students' perceived value	Practical application ability
Professional knowledge					2.155*	1.799*
The ability to detect and solve problems	0.671				1.945*	2.215*
Team work and communication skills	0.730	0.682			1.877*	1.973*
Work attitude	0.715	0.653	0.700		2.140*	2.034*
Students' perceived value	0.627	0.659	0.646	0.604		2.201*
Practical application ability	0.664	0.668	0.677	0.786	0.756*	

* VIF (variance inflation factor)

Table 6
R^2 and f^2 of the model

	Professional knowledge	The ability to detect and solve problems	Team work and communication skills	Work attitude	Students' perceived value	Practical application ability
Professional knowledge					0.015	0.129
The ability to detect and solve problems					0.028	0.001
Team work and communication skills					0.084	0.029
Work attitude					0.028	0.023
Students' perceived value						0.208
Practical application ability						

	R Square	R Square Adjusted
Students' perceived value	0.444	0.438
Practical application ability	0.619	0.614

The following criteria enable this assessment: coefficient of determination (R^2) and the effect size (f^2). The coefficient of determination (R^2 value) depicts the structural model's predictive accuracy and is calculated as the squared correlation between a specific endogenous construct's actual and predicted values. The R^2 represents the amount of variance in the endogenous constructs explained by all the exogenous constructs linked to it. The R^2 value ranges from 0 to 1, and a value nearer to 1 indicates high predictive accuracy. The f^2 effect size shows the impact of a specific predictor construct on an endogenous latent construct. In our study, all R^2 values are acceptable. All obtained f^2 values lower than 0.02 represent small of the exogenous latent variable. Therefore, the results indicate that the effect of all factors on entrepreneurial intention has a large effect size. Also, all the calculated R Square and R Square Adjusted are acceptable. In this model, it is shown that the ability to detect and solve problems has a small impact on Practical application ability ($f < 0.02$).

4.3. Significance level of hypothesis testing

Table 7
Bootstrapping results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Professional knowledge → Students' perceived value	0.126	0.128	0.060	2.095	0.037
Professional knowledge → Practical application ability of Economic Management's program in work	0.359	0.357	0.057	6.328	0.000
The ability to detect and solve problems → Students' perceived value	0.183	0.176	0.075	2.447	0.015
The ability to detect and solve problems → Practical application ability of Economic Management's program in work	0.102	0.102	0.060	1.699	0.090
Team work and communication skills → Students' perceived value	0.295	0.298	0.063	4.683	0.000
Team work and communication skills → Practical application ability of Economic Management's program in work	0.234	0.232	0.055	4.258	0.000
Work attitude → Students' perceived value	0.184	0.186	0.061	3.036	0.003
Work attitude → Practical application ability of Economic Management's program in work	0.174	0.178	0.060	2.920	0.004
Students' perceived value → Practical application ability of Economic Management's program in work	0.377	0.374	0.046	8.166	0.000

In this research, all the relationships were tested at a 95% confidence level, which means that the P value of a relationships must not be higher than 0.05. It appears that all factors have effect on students' perceived value and students' perceived value has strong effect on practical application ability ($t = 8.166$; $p < 0.01$) (Table 7). Among the factors effecting students' perceived value, team work and communication skills has the strongest effect. However, among the relationship between factors and

practical application ability of program, the result did not support the hypothesis that the ability to detect and solve problems (DSP) has a direct impact on practical application ability of Economic Management's program in work (PPA) (t = 1.699 <1.96; p>0.05). All the other factors have a strong impact on Practical application ability of Economic Management's program in work (t = >1.96; p<0.05), in which professional knowledge has the strongest impact on practical application ability of Economic Management's program in work (t = 6.328 >1.96; p<0.05).

Table 8
Model fit indices

	Saturated Model	Estimated Model
SRMR	0.037	0.049
NFI	0.909	0.916

As shown in Table 8, SRMR value is below 0.08 and NFI value is above 0.9, indicating that the model is enough fit to the experimental data and can be used to analyze the actual data. Fig. 2 shows the proposed structural model.

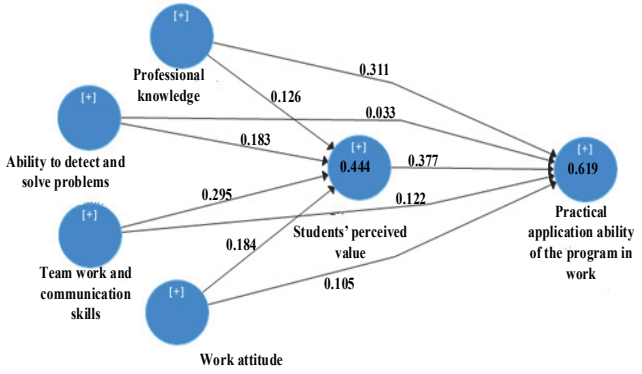

Fig. 2. Structural model

Fig. 2 presents the overall structural model. The beta coefficients shown on the links represent the strength of the effect of each factor to the outcome. It can be concluded that all four independent factors have significant impacts on students' perceived value. Meanwhile, students' perceived value as a moderator variable has also an impact on practical application ability of the program. This is a remarkable finding when compared with the previous studies that only independent factors (knowledge, skills and attitude) have a direct effect on practical application ability of the program (Boahin & Hofman, 2013). This model emphasizes the role of mediating variable students' perceived value in the study of educational quality. However, the beta coefficients of direct relationships (without students' perceived value as a mediating variable) show that the ability to detect and solve problems did not have any effect on practical application ability of the program (β = 0.033, p>0.05). The other three factors including professional knowledge, team work and communication skills and work attitude have had significant effects on practical application ability. Among these factors, professional knowledge has the largest effect. The coefficients on the link also indicate that a unit increase score of professional knowledge will be associated with an increase of 0.311 units in practical application ability of the program in work. Similarly, a unit increase score of team work and communication skills and work attitude will be associated with an increase of 0.122 and 0.105 units in practical application ability of the program, respectively.

5. Conclusions

Outcome-based education is grounded in the idea that academic success is best measured by what students actually obtains. The study has examined the influence of different factors on effecting practical application ability of Economic Management's master program in work at universities in Hanoi. The study findings indicate that professional knowledge, the ability to detect and solve problems, team work and communication skills and work attitude had direct impacts on students' perceived value; and students' perceived value had a direct impact on practical application ability of Economic Management's master program in work. It has also shown that professional knowledge did not have any direct impact on practical application ability of Economic Management's program in work and the ability to detect and solve problems only had indirect impact on practical application ability through the moderator of students' perceived value. The study also highlighted the importance role of students' perceived value. The study findings have several significant implications for educators. Developing graduate employability skills and attributes should be included in faculty and departmental level planning. Universities need to reflect the promotion of employability skills and attributes in their mission statements, learning and teaching strategies, course frameworks, strategic documents and practical guidance. Our study is not without limitation; i.e., the study was mainly based on quantitative method and data collection was done at a short period of time which does not provide insights over time. The study findings are expected to provide important insights to institutional managers, lecturers and other regulatory authorities in developing curriculum for master's program in Economic Management.

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