ASSESSING THE NEED FOR A MASTER OF SCIENCE DEGREE IN AUTOMOTIVE TECHNOLOGY MANAGEMENT

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1. Introduction

1.1 Existing four-year programs

Indiana State University (ISU), in Terre Haute, Indiana has a rather unique baccalaureate degree program entitled Automotive Technology Management (ATM). The intent of the ATM program is to build (develop) a product (graduate) that the automotive industry can use, from day one. The ISU College of Technology, where the ATM program is housed, specializes in developing industrial technologists. The National Association of Industrial Technology (NAIT) helps define the role of the technologist through its definition of industrial technology.

> Industrial technology is a field of study designed to prepare technical and/or management-oriented professionals for employment in business, industry, education, and government. Industrial technology is primarily involved with the management, operation, and maintenance of complex technological systems, while Engineering and Engineering Technology are primarily involved with the design and installation of these systems. (NAIT, n.d., ¶ 5)

The technologist serves well as the group leader. A typical project team may be comprised of engineers, technicians, subject matter experts, and financial planners, among others. Essentially, the job of the technologist is to hold the team together and allow it to function as a unit.

Functioning as a team leader requires the technologist to know the language of the various factions within the group such as engineer, technician, subject matter expert, and financial planner. The technologist must be competent in each facet to accurately assess and comprehend each faction, consider implications to others, formulate relevant options, and reach a decision. Ultimately, the successful technologist must communicate that decision to each party in such a way that contributes to buy-in of each party.

A total of 16 institutions in the United States currently offer four-year degree programs Automotive Technology Management, Automotive Technology, or Automotive Engineering Technology. All 16 institutions, both public and private, are listed in Table 1.1. To be included in the list of similar programs, the automotive programs were found to be separate and not merely listed as an option within a manufacturing or industrial degree. Automotive Engineering programs were excluded from this study, as the curriculum review process determined these engineering programs did not typically prepare automotive managers, whereas Automotive Engineering Technology programs included management courses.

The commonalities in curriculum design of these 16 automotive programs provide students with in-depth technical skills, a breadth of technical knowledge, and specific management skills

required in the automotive industry. Many programs listed in Table 1.1 emphasize skills in supervision and personnel management, financial analysis and accounting principles, sales promotion and market planning, problem-solving methods, and organization and planning techniques. A significant emphasis on proficiency in communications and mathematics was recognized.

Table 1.1 *Institutions with Baccalaureate Programs in Automotive Technology*

Institution	City	State
Colorado State University	Pueblo	Colorado
Brigham Young University	Rexburg	Idaho
Southern Illinois University	Carbondale	Illinois
Indiana State University	Terre Haute	Indiana
Pittsburg State University	Pittsburg	Kansas
Benjamin Franklin Institute of Technology	Boston	Massachusetts
Andrews University	Berrien Springs	Michigan
Ferris State University	Big Rapids	Michigan
Minnesota State University	Mankato	Minnesota
Central Missouri State University	Warrensburg	Missouri
Montana State University	Havre	Montana
Farmingdale State University	Farmingdale	New York
Morrisville State College	Morrisville	New York
Penn College	Williamsport	Pennsylvania
Weber State University	Ogden	Utah
Walla Walla College	College Place	Washington

1.2 Existing Automotive Technology Management Master Degree Programs

Automotive graduates from the 16 institutions identified in Table 1.1 have few options should they desire to continue their automotive education. Extensive on-line searching and a review of *The College Blue Book* (Karges & Thompson, 2005) revealed just five automotive related graduate degree programs within the United States. All five are extensions of engineering programs. A review of the admission requirements of the five master's level programs found that graduates of automotive technology programs did not meet admission pre-requisites. A review of three typical Masters of Business Administration (MBA) programs determined automotive graduates often did not meet specific undergraduate course requirements for admission to the degree program. Since no graduate degree programs exist in Automotive Technology Management, there initially appears to be a plausible need for such a master's level degree.

1.3 Summary of the Problem

With the increased demand for well educated, technically skilled personnel entering the workforce, there arises the possibility of a need for continuing automotive specific education

beyond the baccalaureate level. The purpose of this study was to determine the perceptions of automotive professionals in regard to the importance of education beyond the bachelor's degree and in regard to the topics or content areas that are most important.

At the onset of this investigation there was no single list of institutions offering four-year degrees in automotive technology, automotive engineering technology, or automotive management. Identifying this group became a time consuming task involving several individuals and source materials. The list of 16 programs identified through this study provides faculty members and potential students with a multitude of possibilities. While it is evident by the respective institutions' catalogs, all 16 programs are unique in many respects yet share the common thread of automotive technology.

A review of literature provided insight into the professional master's degree in the United States, offering a system already in place for such a degree in automotive technology management (Peters, 2005). Those building a master's degree program for their institution typically have the luxury of benchmarking those programs that might be similar. Extensive searching found no such master's degree in existence within the United States. Without past successes and failures of existing programs, an institution must proceed with caution. Does a need really exist? If so, why isn't another institution answering the need? These questions have served as anchors and guideposts for this study.

2. Methodology

Automotive professionals, for the purpose of this study, encompass a large population of individuals with varying backgrounds and education whose current career or occupation involves the construction, service, or education of or concerning automobiles and trucks or the management of these functions. For this study, it was necessary that respondents had a bachelor's degree in automotive technology or taught automotive technology at one of the 16 institutions identified in Table 1.1. This ensured that the respondents had first-hand knowledge of a bachelor's degree program in automotive technology and could more accurately assess the needs of other graduates based upon their own experiences.

A survey was developed to determine the opinions of automotive professionals concerning the need for a Master of Science Degree in Automotive Technology Management. Based on surveys used in research by Schafer (2002), Arnold (1987), Kistler (1996), and Brauer (1994), and the research on surveys by Dillman (2000), a survey of less than 30 statements appeared to be practical. The survey statements centered about the need for education beyond the bachelor's degree relevant to automotive professionals. The survey was constructed to identify topics or content areas that automotive professionals considered important beyond the typical baccalaureate automotive degree program. Once the topic or content areas were addressed, respondents were asked their level of agreement with five statements regarding the need and scope of a master's degree program specific to Automotive Technology Management.

Across the 16 automotive programs identified in Table 1.1, it was estimated that 50 faculty members were delivering automotive specific courses within the four-year program. Using this number as a guide and the fact that analyses of variance require a minimum of 10 to 15 responses per cell to maintain robustness to error, 25 faculty members were to be randomly selected to participate in the study. The department chairpersons of the 16 automotive programs were contacted for input on the number and subsequent names of faculty teaching in the four-year automotive programs. During this process, it was learned the original estimates were too high.

Thus, what began as random sample of faculty members currently teaching in a four-year automotive program rapidly gave way to a more systematic approach nearly achieving 100% response from the entire population of faculty actively teaching automotive specific courses within the four-year degree programs. This systematic approach involved identifying a minimum of one faculty member in each of the 16 programs. After completing the survey process with the first faculty member of each institution, the faculty member was solicited for the names of other members teaching in their four-year automotive program. From these post-survey discussions, the relative size of the program was determined. In order to achieve the 25 faculty responses for the survey, two faculty members were contacted from those programs with more than 80 majors. Three faculty members were contacted from the largest program. Thus, all 16 programs were included in the faculty survey, with more faculty input solicited from larger programs, with an effort to achieve one faculty response for every 80 currently enrolled students in the respective major. This systematic approach was implemented to achieve response from all active programs identified in Table 1.1. Surveying a representative sample of automotive faculty from every program, and surveying graduates of specific programs, inferences might be made to graduates of the other automotive programs.

The other sample population encompassed students who have graduated from the automotive program at Indiana State University. A list of graduates was obtained from the university's alumni association with current addresses and telephone numbers. The list was sorted by year of graduation and then last name. From this list of 421 graduates over the last 35 years, a random list of numbers was generated. Each graduate was assigned a consecutive number beginning with the first person on the list. Fifty-five random numbers were computer generated. Thus, 55 randomly chosen participants constituted the student sample for the survey.

3. Results

The survey was administered via telephone. Of the 26 faculty members selected, 25 faculty members participated in the survey for a 96% response rate. Although the one faculty member did agree to participate, several attempts over four weeks proved unsuccessful. Of the 55 graduate members selected, all 55 were accurately identified as being graduates of the four-year automotive program at ISU, 29 members participated, achieving a 53% response rate. Of the 26 non-respondents, 13 were contacted but declined to participate, 11 had valid contact information but could not be reached, and 2 offered kind words of wisdom but declined to participate in the survey. The fact that faculty were called at work and the graduates were called at home could account for what appears to be significant differences in group response rates. However, the cause for non-response was not investigated in this study.

Table 3 *Survey Response Rate*

Participants	Attempts	Respondents	Response Rate
Faculty	26	25	96%
Graduates	55	29	53%
Total	81	54	67%

As depicted in Table 3, across the entire survey, 81 total participants were identified, with 27 non-respondents, for a total response rate of 67%.

3.1 Reliability of the Survey

A coefficient alpha test for internal consistency was conducted between the 29 items on the survey. Item 25 asking for an additional topic was omitted from the procedure. Of the 54 respondents, only one had missing data and was subsequently excluded from the procedure. With less than 2% of the cases excluded, the 29 item survey yielded a Cronbach's Alpha of .833. According to Crocker and Algina (1986) this means that 83.3% of the variance is due to true variance. According to Brown (1983), this result falls within the level of acceptable reliability. Thus, the survey has a positive measure attesting to reliability and adequate evidence of validity.

3.2 Demographic Data

The first three survey questions constituted demographic data. Based on the appropriate sample list used, the position status of faculty of one of the 16 identified four-year automotive programs or Indiana State University automotive program graduate was known prior to contacting the participant, and, therefore, was not included as a survey question. The first survey question of "How many years have you taught in a four-year automotive related program?" obtained equal interval data. The second survey question of "How many years of automotive industry experience do you have?" obtained equal interval data as well. The third and final demographic question obtained ordinal data concerning the respondents' level of education. The four ordinal levels of education data collected and the interval data for industry experience were transformed into dichotomous categories for use with statistical calculations. As described in the methodology, the four levels of education were further reduced to the two categories of bachelor's degree only and more than a bachelor's degree. The years of industry experience was divided into two categories of under 10 years experience and 10 years and over. Table 3.2 provides the frequency counts for each cell.

Table 3.2 *Demographic Cell Data for Analyses of Variance*

Industry Exp	Degree	Faculty	Grad
Under 10 years			
	Bachelor's only	0	11
	Bachelor's plus	17	4
10 years plus			
	Bachelor's only	0	10
	Bachelor's plus	8	3

3.3 Ranking the Content Areas or Topics

What knowledge, skills, or abilities do automotive professionals believe are needed beyond the bachelor's degree? Arranged in topics or content areas, a list of 24 items was presented to respondents to rank the topics' importance on a scale from 1 to 5. Table 3.31 provides a list of topics arranged by the means. Communication is identified as the number one topic to be emphasized in a program. Interestingly, application skills and advanced topics in automotive technology follow closely behind. In comparison, the business aspects of supply chain management fell to the bottom half of the list. With topics such as research methods, statistical analysis, and automotive technology research also in the bottom half, institutions must be cognizant that automotive professionals appear to need more education in applied automotive

technology, rather than in traditional research. More emphasis is clearly placed on decision making tools than on engineering tools.

In addition to the rankings of the 24 items, question 25 on the survey asked for at least one additional topic that was not addressed. Of the 44 topics received by 35 respondents 24 were either suggestions for the current four-year program or applied to topics already in the list. Of the 20 valid topics received, six added automotive electronics, two added dealership finances, and two added quality control. Perhaps a case can be made that automotive electronics should be incorporated into the curriculum. Perhaps dealership financial matters and quality control issues also have a place within the curriculum. Some credence might be given to the other topics in Table 3.32 as to their applicability in such a degree. Perhaps the best use of the data received in survey question 25 is for further research adding these items and then performing a similar ranking as was done for research question one.

Table 3.31 *Ranking of 24 Content Areas or Topics in Descending Order of the Means*

Content Area or Topic	Mean	Std. Dev.
Communication	4.70	0.57
Internship/Co-op	4.15	1.12
Adv Comp Apps	4.11	0.84
Applied Project	4.06	0.71
Current Auto Technology	3.89	1.11
Stats in MGT	3.85	1.04
MGT in Manufacturing	3.85	0.91
MGT in Service	3.80	1.09
Adv Engine Principals	3.75	1.14
Alternative Fuels	3.74	1.24
Adv Emissions	3.64	1.23
Auto Fuels	3.60	1.15
Supply Chain MGT	3.54	0.97
H R Development	3.50	0.93
Research Methods	3.50	0.88
Statistical Analysis	3.48	1.18
Auto Tech Research	3.46	1.04
H R Management	3.28	0.98
Distribution Systems	3.26	0.96
Adv Marketing	3.20	0.86
Trans Systems	2.98	1.05
Adv Finance	2.91	1.11
Traffic Management	2.87	0.97
Adv Accounting	2.57	1.01

Taking into account the 24 items, topics, or content areas were not meant to be courses in and of themselves, developing a master's degree program becomes a bit more complex than simply choosing the top eleven topics. For instance, communications is clearly the number one topic or content area that must be addressed. The question remains, does there need to be a specific course on communication skills, or should communication skills permeate every course within

the program? The actual packaging of a program was not addressed in this study. It is conceivable that all topics addressed in this study could be incorporated within the curriculum. Part of the valuable information in this study ranks the importance of the topics and provides a guide of how much of each ingredient should go into the recipe.

Question 25 on the survey asked the respondents for one more topic or content area, important in the automotive profession, which was omitted from the list. Only 19 respondents chose not to respond to this question. Many of the 35 respondents included more than one topic. The topics have been compiled into Table 3.32 ranking the topics by frequency counts. Closely related topics from separate respondents were combined. Of the 44 topic or content areas identified on survey question 24, 24 were essentially repeats of, or closely related to, topics or contents areas already addressed. Of the 35 respondents, 13 re-emphasized communication and computer skills. There were 11 responses similar to existing topics: statistical analysis, projects, traffic laws, and human resources. The remaining 20 topics or content areas comprise Table 3.32.

Table 3.32 *Ranking of Other Topics by Frequency Distribution*

Topic or Content Area	Frequency
Automotive Electronics	6
Dealership Finance	2
Quality Control	2
Critical Thinking	1
E-commerce	1
Fleet MGT Activities	1
Insurance	1
Metallurgy	1
Psychology	1
Robotics	1
Role of Engineering in Automotive	1
Thermodynamics	1
Time Management	1

3.4 Differences between Educators and Graduates

For different positions, industry experience, and level of education, is there a significant difference between groups of automotive professionals in regard to their ranking of the importance of knowledge, skills, and abilities needed beyond a bachelor's degree?

Rank ordering the topic or content areas based on the means of the sample does not allow for inferring these responses will be similar for all graduates of the 16 programs. Since the faculty sample is representative of all 16 institutions, and the graduates are from a random sample of the automotive program graduates at ISU, it might be inferred that if no significant difference exists between the two groups within the survey, that the graduates of the other institutions with four-year automotive programs might also be similar. This is the reasoning behind the second research question which seeks to determine differences between the groups. A factorial multivariate analysis of variance (MANOVA) was used as it controls for alpha much simpler than running multiple independent samples t-tests and then accounting for the amplified

possibility of creating a Type II error. Additionally, any significant interaction of the Independent Variables can be discovered through MANOVA.

A MANOVA was conducted to determine the effect of position, level of education, and years of automotive experience on the twenty-three dependent variables, which includes the topics or content areas previously identified in the ranking of the means. The MANOVA results (Table 3.41) indicate that the position of professionals as faculty or graduate (Wilks' Lambda = .331, $F(23, 25) = 2.196$, $p = .029$, effect size = .669), industry experience of more or less than ten years (Wilks' Lambda = .250, $F(23,25) = 3.262$, $p = .002$, effect size = .750), and the level of education being a bachelor's degree or more (Wilks' Lambda = .327, $F(23,25) = 2.236$, $p = .026$, effect size = .673) were statistically significant main effects for the combined dependent variable rankings obtained from the survey. The effect size for the multivariate test associated with Wilks' Lambda is the multivariate eta square. This statistic ranges from 0 to 1 with a 0 indicating no relationship between the independent and dependent variables. A 1, on the other hand, indicates the strongest possible relationship. Accordingly, 67% of the variance of the responses on the topics was attributable to the main effect of the position of faculty or graduate. Similarly, 75% of the variance of the responses on the topics was attributable to the main effect of industry experience of under 10 years or at least 10 years. Finally, 67% of the variance of the responses on the topics was attributable to the main effect of education of a bachelor's degree or more. According to Green and Salkind (2005) there is no clear standard of what constitutes a small, medium, or large effect size for the multivariate statistic eta square.

Table 3.41 *Omnibus Multivariate Test Results*

Effect	Wilks' Λ Value	F	Sig.	Eta Square
Faculty or Graduate (F)	.331	2.196(a)	.029	.669
Industry Exp < or > 10 Years (I)	.250	3.262(a)	.002	.750
Education = or > Bachelor (E)	.327	2.236(a)	.026	.673
F interaction with I	.402	1.617(a)	.121	.598
I interaction with E	.528	.970(a)	.527	.472

Notes. Hypothesis degrees of freedom = 23, and error degrees of freedom = 25 across all levels. All interactions with zero F values were omitted. Λ = Lambda.

(a) = Exact statistic

The MANOVA results indicated no statistically significant interactions between position and industry experience (Wilks' Lambda = .402, $F(23, 25) = 1.617$, $p = .121$) or between industry experience and level of education (Wilks' Lambda = .528, $F(23, 25) = .970$, $p = .527$). Since these interactions were not significant, no effect size is reported. The interactions between position and level of education could not be computed as all faculty members surveyed had at least a master's degree leaving one cell with no participants. For this same reason the multiple interactions between position, level of education, and industry experience was not computed.

Follow-up tests were conducted to identify the topics or content areas (DV's) of significance. Utilizing the tests of between-subjects effects table created during the MANOVA computations with SPSS, significance for the different groups can be obtained across each separate content area. The means of the groups for the content areas or topics with significance can be found in Table 3.42. This data was used to determine direction for the significance.

Since the original MANOVA found no significant interactions (Table 3.41), the interaction data obtained on follow-up tests were not considered. Results indicate the main effect of position was significant for distribution systems ($F(1, 47) = 4.301$, $p = .044$, effect size = .084) and traffic management ($F(1, 47) = 5.201$, $p = .027$, effect size = .100). Faculty members placed more importance on both distribution systems and traffic management than did graduates (Table 3.42). The faculty within the survey were representative of all 16 programs while the graduates were representative of one program. When analyzing just the results from these two groups, the only statistically significant differences in the 23 topics or content areas were distribution systems and traffic management. For the remaining 21 topics or content areas, no statistically significant differences were found. With this information it was concluded that there was little difference between the two groups allowing, perhaps, the inference that a survey of graduates from the other automotive programs identified in Table 1.1 may not produce statistically significant differences on the same survey.

The effect size for this follow-up analysis is partial eta square and is computed by taking the sum of squares for the factor and dividing this by the sum of squares for the factor and the sum of squares for the error. Like the multivariate effect size of eta square, the statistic for partial eta square ranges from 0 to 1 where 0 indicates no relationship and 1 indicates the strongest possible relationship between the independent variables and the dependent variable. For partial eta square, using the independent samples t-test, the conventional cutoffs are .01, .06, and .14 for small, medium, and large effect sizes. For analysis of variance such as these, effect size classifications of small, medium, and large are undetermined and dependent upon the area of investigation (Green & Salkind, 2005). Referring to the preceding paragraph, the effect size of .084 indicates that 8.4% of the variance in the response for distribution systems can be explained by the main effect of position. Likewise, the effect size of .100 indicates that 10% of the variance in the responses for traffic management can be explained by the main effect of position.

Results indicate the main effect of industry experience was significant on research methodology ($F(1, 47) = 4.102$, $p = .049$, effect size = .080), with those with less than 10 years of experience placing more importance on the topic (Table 3.42). The main effect of industry experience was significant for advanced marketing ($F(1, 47) = 5.321$, $p = .026$, effect size = .102), while Table 3.42 shows those with 10 years or more of industry experience placed more importance on the topic.

Table 3.42 *Content Area Means between Groups with Significance*

Content Area	Group	Means
Distribution Systems	Faculty	3.452
	Grad	2.887
Traffic Management	Faculty	3.151
	Grad	2.511
Research Methods	10 Years +	3.139
	< 10 Years	3.814
Advanced Marketing	10 Years +	3.522
	< 10 Years	2.904
MGT in Service Areas	4-Yr Degree	4.105
	> 4-Yr Degree	3.356

For the main effect of experience, those with less than 10 years industry experience placed more emphasis on research methodology and less emphasis on advanced marketing than those having 10 or more years of industry experience. Placing more emphasis on research methodology by those with less than 10 years of experience could imply that the focus of industry is shifting, requiring professionals to possess more knowledge of research methodology to enable them to compete for higher level positions. Research methodology should be examined carefully as it is positioned third below the midpoint. Since those with less than 10 years of experience would likely be most interested in a master's program, consideration should be given to making this an important part of the educational experience. By placing a lesser emphasis on advanced marketing than their more experienced counterparts, again the implication of the industry's shift in focus is encountered. Advanced marketing is fifth from the bottom of the list making it less of a factor to be considered for inclusion in an automotive technology management master's degree.

Results indicated the main effect of level of education was significant for management practices in service areas ($F(1, 47) = 5.033$, $p = .030$, effect size = .097). Table 3.42 shows those having only a bachelor's degree placed more importance on the topic.

For the main effect of education, those having only a bachelor's degree placed more emphasis on management practices in service areas than did those having more than a bachelor's degree. Even though there was a statistically significant difference between the groups in respect to education, the topic of management practices in service areas ranked eighth overall and fourth above the midpoint. However, it should be noted that those with higher levels of education placed statistically less significance on this topic.

3.5 Does a MS in ATM = Advancement?

Do automotive professionals believe that education beyond the bachelor's degree would improve the automotive professional's ability to advance to higher paying management positions? While 75% completely agreed with the statement, over 92% of the respondents at least somewhat agreed that education beyond the bachelor's degree would be beneficial to automotive professionals seeking advancement to higher levels of management (Table 3.5). Clearly, if automotive professionals believe education beyond a bachelor's degree would help them advance, then there is a perceived need for such higher education.

Table 3.5 *Frequency Distribution for Question 26*

Level of Agreement	Frequency	Percent	Cumulative Percent
no opinion	1	1.9	1.9
Disagree	3	5.6	7.4
Somewhat Agree	9	16.7	24.1
Agree	41	75.9	100.0
Total	54	100.0	

2.6 Does a MS in ATM = Higher Starting Salaries?

Do automotive professionals believe graduates of four-year automotive programs could often secure higher level starting positions if they completed a Master of Science Degree in automotive technology management? Although not as robust as the data in Table 4.9, the data from Table

2.10 clearly shows a majority, in fact, 77% agree with the statement above. Among the faculty responses, there was dissention as to the effects of starting out with a master's degree or getting it somewhere along the way. Some felt that while a master's degree would lead to a higher starting salary, the margin of increase would be small due to the lack of experience. These remarks were noted in the margins of the survey. Even with the extenuating remarks, the majority of those surveyed believed graduates of a master's degree program could obtain higher level salaries over their bachelor's degreed counterparts.

In answering the question, do automotive professionals believe that graduates of four-year automotive programs could often secure higher level starting positions if they completed a Master of Science Degree in automotive technology, as suggested in chapter three, descriptive statistics utilizing frequency counts is sufficient. Thus, Table 3.6 displays the data for statement 27 of the survey. While 57% completely agreed with the statement, over 77% of the respondents at least somewhat agreed that education beyond the bachelor's degree would be beneficial to automotive professionals seeking higher starting salaries. This overwhelming number strongly suggests the need for higher education in the automotive industry. With such a majority of respondents believing higher education in the automotive field will lead to higher starting salaries or that it will lead to higher management positions, it is difficult to suppose otherwise.

Table 3.6 *Frequency Distribution for Question 27*

Level of Agreement	Frequency	Percent	Cumulative Percent
Disagree	5	9.3	9.3
Somewhat Disagree	7	13.0	22.2
Somewhat Agree	11	20.4	42.6
Agree	31	57.4	100.0
Total	54	100.0	

4. Summary of Findings

Evidence of validity and reliability for the survey instrument was demonstrated. Of the differences found in the 23 topics or content areas, all congregated to the bottom half of the distribution with the exception of management practices in service areas. No statistically significant differences were found in the level of agreement with the five statements relating to the need of a master's degree program. Thus, with few differences noted among the groups of automotive professionals, it might be possible to generalize the results for the remaining graduates of the automotive programs identified in Table 1.1.

4.1 Conclusions

Based on the statistical evidence presented, it is concluded that the groups of automotive professionals represented in this survey:

1. Have identified many of the important topics or content areas that should be included in a master's degree.
2. Have few statistically significant differences concerning the importance of certain topics or content areas important for education beyond the bachelor's degree.

3. Overwhelmingly agree that education beyond a bachelor's degree will enhance a bachelor's degree graduate's possibility for obtaining higher paying management positions.
4. Agree education beyond a bachelor's degree will enhance a bachelor's degree graduate's possibility for obtaining higher paying starting positions.

Since the results of this study showed minimal statistical differences between the faculty and graduates, it might be possible to infer that graduates of the other automotive programs might be similar to graduates of the ATM program at ISU.

4.2 Recommendations

Based on the findings and conclusions, the following recommendations are made:

1. Evidence indicates a feasibility study should be conducted for implementing a master's degree program in automotive technology management at Indiana State University utilizing the results of this study as a framework.
2. Since the telephone survey achieved only a 53% response rate with graduates, perhaps more research should be conducted to identify why so few graduates of the automotive program were interested in helping that program.
3. This study should be replicated to further validate, evaluate, and substantiate the findings of this study.
4. Further study in this area could include the additional topics or content areas identified in the study.
5. Graduates from other universities should be included in a similar survey to add to the generalizability across the 16 institutions.

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