

ECONOMICS

Factors Influencing the Use of Management Accounting Information Systems in Vietnamese Enterprises

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Abstract

Management accounting system has positive support in providing information for decision-makers. Based on Upper Echelons Theory, this study examines the impact of top managers' characteristics (age, education background, and risk-taking propensity) on the choice of prospector strategy, the use of management accounting system information, and financial performance. Partial Least Squares Structural Equation Modelling (PLS-SEM) was used to test the hypotheses. The analysis was based on a sample of 218 medium and large manufacturing enterprises in Vietnam and showed that all hypotheses were statistically significant, except for the effects of managers' age and risk-taking propensity on financial performance. This study extends the application of upper echelons theory to the field of management accounting and demonstrates that aligning top managers' characteristics, organizational strategies, and the use of management accounting system information can improve organizations' financial performance.

Keywords: Age; Risk-taking propensity; Management accounting system; Financial performance.

Introduction

Managers primarily employed accounting information to enhance their management efficiency in the production and distribution functions in accordance with national plans during the centrally planned economy [1]. Liberalization and integration into the global economy have been among the numerous activities that have emerged since 1986 [2]. Vietnamese organizations are confronted with competition from both domestic and foreign sources in light of the implementation of new laws and regulations that are intended to promote diversified business [3]. For instance, the level of fierce competition has increased as Vietnam has joined numerous global organizations, including the World Trade Organization (WTO) and the G20 [4]. Additionally, the 4.0 industrial revolution has introduced numerous breakthrough technologies that have significantly altered the Vietnamese industry. The US-China trade war has also had a significant impact on Vietnam in terms of economics and politics, necessitating that businesses adjust to a rapidly changing and dynamic environment [5, 6]. The national economy in general and the manufacturing industry in particular are both impacted by the aforementioned trends, which present both opportunities and

challenges [7]. In order to navigate this environment, top managers at Vietnamese manufacturers require a variety of information sources to make decisions, including information from management accounting system [5, 8].

The management accounting system (MAS) is considered a subsidiary control system within the "overall organizational control system. MAS is used by top managers to make more effective decisions during the implementation of the chosen strategy [9]. Therefore, examining which demographic or psychological characteristics of top managers influence the use of MAS information in strategy implementation is necessary to achieve an effective strategy [10]. In accounting research in general and the behavior of using MAS information in particular, demographic characteristics such as age and education background are two traits that have a strong impact on managerial behavior and are the easiest to observe, yet have not received much attention (Hambrick & Mason, 1984; Hiebl, 2014). In addition, in many studies in the field of strategic management, the managerial risk-taking propensity among managers has been a focus of research [11], however, this psychological trait of the manager is still limited in the field of accounting [5]. Prospector strategy is one of the four strategies that Miles et

al., (1978) indicated and in the current competitive environment, implementing prospector strategy with innovative characteristics is a trend among manufacturing enterprises. Furthermore, studies based on upper echelon theory (UET) regarding the level of MAS usage have not yet focused on the financial performance achieved by the organization. Therefore, studying the influence of demographic characteristics (age, education background) and psychological traits (managerial risk-taking propensity) on the choice of high-risk strategies such as prospector strategy and the level of MAS information use to implement the prospector strategy chosen by top management is a research gap that needs to be addressed in empirical studies in Vietnam. At the same time, the alignment between the characteristics of top managers and the choice of prospector strategy, as well as the level of MAS information usage, will significantly impact the organization's financial performance. Therefore, examining the role of financial performance in the research model is also a highlight of this study.

The Upper Echelons Theory (UET) was first introduced by Hambrick và Mason (1984). Recently, this theory has gradually been used in the field of management accounting but is still very limited. Based on UET, this study will examine the influence of age, education background, and psychology on the risk-taking propensity of top managers in the process of selecting prospector strategy, using MAS information and the results on the financial performance of the combined relationships.

Based on UET, this is the first study where the author examines the relationship between top manager's characteristics (age, education background, managerial risk-taking propensity), the use of MAS information, choosing prospector strategy, and the financial performance achieved by organizations within the same empirical research model to analyze in a transitional market like Vietnam. Opening up a new research direction on the characteristics of top managers in the field of management accounting in particular and accounting in general in Vietnam. Implying that MAS designers must pay attention to the alignment of MAS with the characteristics of top managers and the chosen strategy of each organization. Because this alignment will contribute to enhancing the financial performance of the organization.

The structure of the research is as follows. The next section of the article presents the foundational theories used, the research concepts, and the development of research hypotheses. Next, the article presents the research methodology and then presents the research results obtained. The final section presents the conclusion, theoretical and managerial implications, and suggests directions for future research.

Literature Review and Hypothesis Development

Literature Review

Upper Echelons Theory (UET)

UET was first introduced by Hambrick and Mason (1984) (Figure 1) and has attracted a lot of attention because it is a theory that explores aspects of human nature, such as demographic characteristics and psychological traits that influence the decisions of top managers Wangrow, Schepker [12]. UET is based on the principle that the performance of an organization (chosen strategy, business capability, and effectiveness) reflects the characteristics and personality of top managers. Therefore, UET contributes to explaining the behavior of top managers in the process of strategy selection, as well as the behavior in the use and design of complex administrative systems within the organization. MAS is considered a complex administrative system of the organization (Chenhall & Morris, 1986; Hambrick & Mason, 1984). Therefore, the UET-based approach to examining the impact of top manager characteristics on prospector strategy choices, the use of MAS information, and financial performance is reasonable.

The strategic choice participation behavior in each organization is dependent on the level of decentralization that exists within each organization [13]. This is due to the fact that this study is centered on strategic choice behavior and the utilization of MAS information pertaining to the implementation of strategies. According to Hambrick and Mason [14], the Chief Executive Officer, Director, and General Director are all absolutely necessary and extremely significant positions. There will be a variety of titles for the executives who are accountable for the operation of the entire firm, and these names will vary depending on the degree of decentralization that exists inside each organization. If there is a high level of decentralization or if there are director titles that are responsible for each department or functional area (for instance, Production Director, Business Director, etc.), then the top management that is chosen for this research will be the general director. If, on the other hand, there are only department heads (such as marketing manager, sales manager, and so on), then there is only one director position in a manufacturing firm. At this time, the top management who was chosen for this study will be the director. Consequently, the executive director, who is accountable for the management of the entire manufacturing firm and whose title may be director or general director, is the senior manager who will be responsible for selecting and implementing the strategy of the organization that was chosen for the study.

Many additional factors, such as gender, and tenure, have emerged since the initial publication of the set of socio-demographic characteristics of top managers in 1984. The number of studies that have been conducted

on these elements has expanded over the course of time. Despite the fact that numerous new demographic factors have been identified over the course of time, the initial characteristics that were identified by Hambrick and Mason [14], which continue to be of significant interest [15, 16]. It has been found that top managers' conduct regarding the selection of strategies and the using of MAS information is influenced and derived from demographic features, according to UET. According to , demographic traits like as educational background, age, experience, and leadership style all have an impact on strategy selection and can be used to predict success in strategy implementation. Additionally, these qualities can also be used to predict how MAS information is used.

However, another problem arises, the demographic characteristics of top managers are numerous. Among them, age [18, 19], education background [20, 21] are considered the most easily observable and measurable personal characteristics but have a strong influence on human behavior as well as that of top managers [14].

UET was initially established and intensively researched in the field of management when it was first introduced. UET has steadily expanded outside the realm of management and has gradually moved to the realm of management accounting [17]. This expansion has occurred over the course of time. Recent developments in this area have included the investigation of human behavior in a variety of aspects that go beyond human demographic variables (for example, psychographics), and it has continued to expand as new psychological factors have been discovered to be important in economic modeling. Tversky and Kahneman [22] 's study was the first significant step in this area. It revealed the utilization of psychological characteristics of economic individuals in the process of making financial decisions. This was the initial breakthrough in this field. The findings of Kahneman and Tversky [23] provided preliminary evidence of economic behavior. These findings demonstrated that additional research on psychological aspects is required in order to completely comprehend human choices and behaviors when they are confronted with risky decision-making circumstances. The primary factors that contribute to this are the age of senior managers, their educational backgrounds, and the inconsistent performance. For the purpose of this study, age and educational background were chosen as demographic criteria that influence strategic choice behavior. The investigation was carried out with the assistance of MAS information and financial performance findings.

From the perspective of UET, the psychology of top managers has been shown to have an impact on the selection, implementation, and outcomes of business strategies [24]. It was the study conducted by [25] that marked the beginning of the investigation into the influence that individual psychological qualities have on performance and its historical context. On the other hand, this particular line of research did not become

popular or widely utilized until the development of psychological tools, such as the Five Factor Model developed by Barrick and Mount [26] and the Myers-Briggs Index developed by Gardner and Martinko [27], as well as the Jackson Personality Inventory and Eysenck tools. The initial the relationships predicted by Hambrick and Mason [14] on the decisions of top managers: that is, the relationships between psychological characteristics - behavior - organizational performance - have gradually been interested in the direction of psychological characteristics ever since the emergence of these psychometric instruments. This is because the involves the relationship between behavior and organizational performance. On the other hand, Hambrick [28] also commented on the initial model he constructed and labeled psychological features a "Black Box", and urged on scholars to pay attention to the psychological characteristics of top managers in the future. His call also helped to overcome the initial skepticism of academics who pointed out the deficiencies of psychological traits of top managers. These deficiencies were emphasized by Davis-Blake and Pfeffer [29] in the original concept and model that Hambrick and Mason [14] proposed.

Managerial Risk-Taking Propensity

Individual decision-making situations and actual behaviors are strongly influenced by the risk-taking propensity. Managers cannot be certain whether the new product they launch in the market will meet consumer demand or achieve profitability, therefore risk is an inherent part of business Tang and Tang [30]. However, a more daring manager will take more appropriate actions and manage better to respond to risks [31]. In this study, the risk-taking propensity is the tendency to carry out actions in reality that the manager considers risky (Sitkin & Weingart, 1995) and the willingness of top managers to commit important resources towards exploiting opportunities or leading to uncertain outcomes [32].

Management Accounting System (MAS)

The management accounting system can be considered an output of the organization or an aspect of the organizational structure [33] and is also considered a complex administrative system [13]. Based on the research of Chenhall and Morris (1986) [13], MAS has four aspects: broad scope, timeliness, aggregation, and integration. Broad scope information provides external, non-financial, and future-oriented information; timeliness refers to the ability of the information to be provided on demand and the frequency of reporting; aggregated information reflects the consolidation of information by different functional departments within the organization over time, while integrated information relates to the interaction between mutually dependent units and the mutual sharing of information. UET believes that the characteristics of top managers will influence the use and design of MAS.

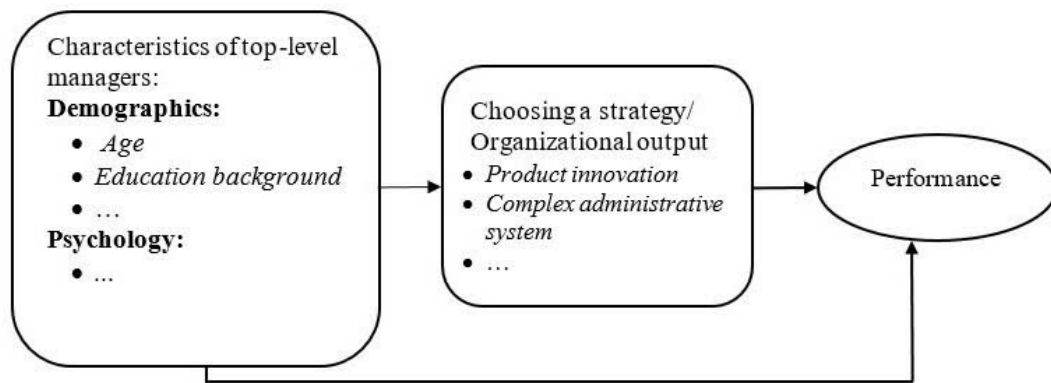


Figure 1: The model of upper echelons theory. Source: Adapted from [14] and [17].

Prospector Strategy

Research of Miles, Snow [34] based on the nature of the organization's life cycle, technical issues, and administrative issues to divide organizational strategies into four types: Defender, Prospector, Analyzers, Reactors. The prospector strategy is suitable for organizations operating in a more dynamic environment compared to other strategies. This strategy constantly seeks and discovers new products, develops new markets, and always maintains the ability to understand changes in the environment, trends, and significant events outside the market and society. In the process of analyzing each strategic characteristic, Helmig, Hinz [35] assessed the prospector strategy as having the highest level of risk because this strategy requires a lot of the company's resources, and if the company does not control and supervise it well, it will cause financial damage to the company.

Hypothesis Development

The age of the manager affects the choice of prospector strategy

The prospector strategy carries many risks due to various issues related to the market, technology, administration, and the high costs required to successfully implement the proposed strategy Miles, Snow [34]. A strategy with many risks is not suitable for managers of older age (Seo & Sharma, 2013) because they are unable to quickly evaluate new ideas and integrate information to make decisions for action implementation [14]. Younger managers, on the other hand, have a penchant for taking chances and have a tendency to execute new initiatives or strategies that involve high risks in the hopes that they would improve their careers in the future. It is therefore possible to hypothesize:

H₁: Younger managers positively influence on the selection of prospector strategy.

Managers' education background affects the choice of prospector strategy

All top managers in a company possess fundamental training in engineering or business, irrespective of

their primary educational background [36]. On the other hand, managers who have a background that is largely in business are more likely to have the capacity to plan money and govern business resources in a more precise and effective manner, as well as the capability of making effective use of accounting information collected from intricate administrative systems within the firm they work for [37]. As a result, managers with levels of education that are not related to business have a greater capacity for risk management. Consequently, this results in self-assurance and decisiveness when selecting prospector strategy that are advantageous to managers who have a foundation in business.

H₂: Managers possessing a business education background positively impact on the selection of prospector strategy

The propensity for management risk-taking influences on the selection of a prospector strategy

The propensity to take risks in management is something that is present in every single human being, but it is especially pronounced in managers because of their strong drive to maximize profits for their companies. Managers that have a background in business education have a beneficial influence on the selection of prospector strategy. It is the risk-taking nature of the top management that will create substantial affects on the organization's pursuit of business ambitions when they are participating in strategy selection and planning. It is for this reason that the personality of the manager, which includes the personality of individuals who are open to change and innovation, is an essential component in the process of making strategic decisions [38]. The necessity to develop new products and enter new markets, the significant influence of an unstable environment, and the manner in which the prospector strategy is implemented all contribute to the fact that a prospector strategy is typically associated with increasing levels of risk [34]. As a result, one can make a hypothesis about it.

H₃: The managerial risk-taking propensity of managers positively influence the selection of prospector strategy.

Managers' age influences management accounting system information usage

As managers age, their capacity to utilize knowledge and confidence in decision-making diminishes; yet, their proficiency in information retrieval and accuracy assessment improves, resulting in longer decision-making processes. Similarly, the cost management system, as a component of MAS, becomes increasingly appropriate for younger managers with greater use [39]. Furthermore, the age of the manager correlates positively with the suitability of the interactive approach in utilizing MAS information [40]. Conversely, adopting a more aggressive strategy is better suitable for younger managers, who must employ risk management with MAS information [15].

H₄: Younger managers will positively influence on the using of MAS information for the implementation of prospector strategy.

The educational background of managers influences the utilization of information in management accounting system

Research of Hartmann, Naranjo-Gil [41] suggests that top managers possessing medical or non-business skills adversely affect the utilization of timely aggregated and integrated financial information, together with comprehensive MAS information. Conversely, managers with a business orientation exhibit greater confidence and are inclined to utilize financial information, as this aligns with the administrative management traits of managers Song [36] and in an unstable environment, synthesized, integrated, and timely accounting information will enable managers to respond swiftly to environmental fluctuations [13].

H₅: Managers possessing a business-oriented educational background will positively impact the utilization of MAS information.

MAS information utilization is impacted by managers' propensity for taking risks

The process of making strategic decisions requires top managers to have access to a tool that may assist them in risk management. In this particular case, the MAS plays a significant role not only in the measurement of risks (which includes the aggregation of risk-related information, risk reporting, and risk monitoring), but also in the reduction of uncertainty in management decision-making and the support of risk management operations [42]. Along this line of research, Kalkhouran, Nedaei [37], [43] showed that risk management activities have a favorable relationship with the four dimensions of MAS. This is due to the fact that MAS information delivers information that is comprehensive, integrated, consolidated, and extremely timely [13].

H₆: The using of MAS information is positively influenced by the risk-taking propensity of top managers.

The age of the manager has an impact on the organization's financial performance

Numerous studies have identified no correlation between the age of the top executives and the performance of organizations [14]. Conversely, a recent study by Wei, Lau [44] demonstrates that elder managers have a favorable impact on organizational performance. The present study is in agreement with the study of Daft and Weick [45]. As a result of the fact that older managers have more experience, they frequently give careful consideration to issues, and they frequently use MAS information to support their analysis of information for decision making. Furthermore, they have sufficient power and relationships to discuss with their colleagues the reliability of the information that they have. These traits are essential for the organization to have in order to attain high levels of organizational performance, as they are required for the direction and selection of long-term strategies.

H₇: Older managers have a positive impact on the financial performance of the business.

The education background of managers has an impact on the financial performance of the organization

Top managers that have a technical orientation are better familiar with the technical processes and operations of the organization, and they are eager to improve the substance of the technical processes [46] and less focused on enhancing the financial performance of organizations [36]. Conversely, managers possessing business education in areas such as management, finance, and accounting typically exercise meticulous oversight of administrative activities and processes to enhance the organization's financial performance, as they exhibit confidence and a reliance on economic and financial data for financial management [36]. Consequently:

H₈: Managers with a business education background will positively influence on financial performance.

The risk-taking propensity of manager influence on financial performance

Although Hambrick and Mason did not make any remarks regarding the connection between the risk-taking traits of managers and the success of organizations when they first presented their theory of UET in 1984, they continued to do so. On the other hand, by combining a variety of research methods, certain researchers have been able to acquire findings that lend credence to the association between taking risks and performance. Gupta [47] has demonstrated that the propensity to take risks has a favorable and considerable impact on the success of strategy implementation. Knight, Durham [48] examined the influence that managers' risk assessments have on the performance of the organization. The interesting

results demonstrated that there is a favorable connection between the risk assessment of managers and the success of the firm.

H₉: The risk-taking propensity of managers positively influences on the financial performance of the firm.

The selection of a prospector strategy influences the using of MAS information

Organizations that adopt a high-risk strategy, such as an prospector strategy, are likely to utilize a broad scope of MAS information to precisely assess the environment and address market demand Miles, Snow [34]. Conversely, a strategy necessitating significant administrative decentralization and flexibility, such as the prospector strategy, mandates that the top manager obtain information from the accounting information system, particularly MAS, characterized by four essential attributes: broad scope, timeliness, synthesis, and integration, to effectively navigate instability and enhance decision-making (Bouwens & Abernethy, 2000). Furthermore, when selecting a prospector strategy, top managers must use MAS information to conduct risk management operations Collier [42]. Consequently, it is evident that when managers opt for and implement a prospector strategy, they are likely to augment the utilization of MAS information.

H₁₀: The selection of a prospector strategy will positively influence on the usage of MAS information

Choosing a prospector strategy affects financial performance

Research on the impact of strategic choices on organizational success has yielded varied results. Chong and Chong [49] showed that the effect of strategy on financial performance was not statistically significant. In contrast, other researchs have found that prospector strategy improves financial and non-financial performance of businesses [50]. Based on recent research by [51], it is necessary to select an innovation strategy, such as an prospector strategy, to respond to the unstable environment, particularly in the manufacturing industry, which is characterized by increasing domestic and foreign competitors, as well as increasingly modern technology, constantly changing customer tastes and needs. It requires the implementation of a breakthrough strategy with innovations, and the prospector strategy fits these requirements, thus it adds greatly to the organization's financial performance. Thus:

H₁₁: Implementing a prospector strategy will enhance the financial performance of the organization.

Using MAS information has an impact on financial performance

The use and application of MAS information influences financial performance. The configuration of MAS is contingent upon the attributes of the

organization. Moreover, information gathered by MAS may be analyzed and transformed into knowledge, serving as a distinctive resource for managers to gain a competitive advantage [52]. MAS can assist management decisions in responding to the dynamism of the environment, such as predicting changes in customer demand. Conversely, from the standpoint of the resource-based view, the utilization of MAS information enhances the financial performance of firms [4]. The valuable characteristics of MAS information will assist managers in making decisions, which will ultimately lead to an improvement in the organization's overall performance

H₁₂: The use of MAS information makes a positive contribution to the overall financial performance of the organization.

The synthesis of research hypotheses are shown in Figure 2.

Research Methodology

Research Sample and Data Collection

The sample comprises CEOs, General Directors, and Directors of Vietnamese manufacturing enterprises. Few studies have currently investigated the correlation between the demographic characteristics (Age and Educational Background) and psychological (Management risk-taking propensity) of top managers, as well as the prospector strategy selection behavior, MAS information usage, and financial performance [53]. In addition, in White Book in 2020 has demonstrated that manufacturing enterprises make a substantial contribution to the GDP of the Vietnamese economy [54]. Consequently, this study helps to enhance financial performance and offers guidance to Vietnamese manufacturing enterprises.

De Vaus [55] posits that the sampling method selected will be significantly influenced by the level of accuracy sought from the survey, the cost of the research, the time available, and the manner in which the data is collected. According to Salkind [56], the results will be more generalizable if a representative sample of the population is used. Many non-probability sampling methods exist, such as convenience sampling, which involves the selection and inclusion of individuals who can provide the author with a convenient source of data [57]

When there is negligible variation in the population and relative homogeneity, convenience sampling is appropriate [58]. The variation in behavior can be tolerated and is quite homogeneous, as the population is composed of CEOs, General Directors, and Directors of manufacturing enterprises. Additionally, this method requires the least amount of resources among the sampling techniques. Consequently, convenience sampling was implemented to acquire official data for this investigation.

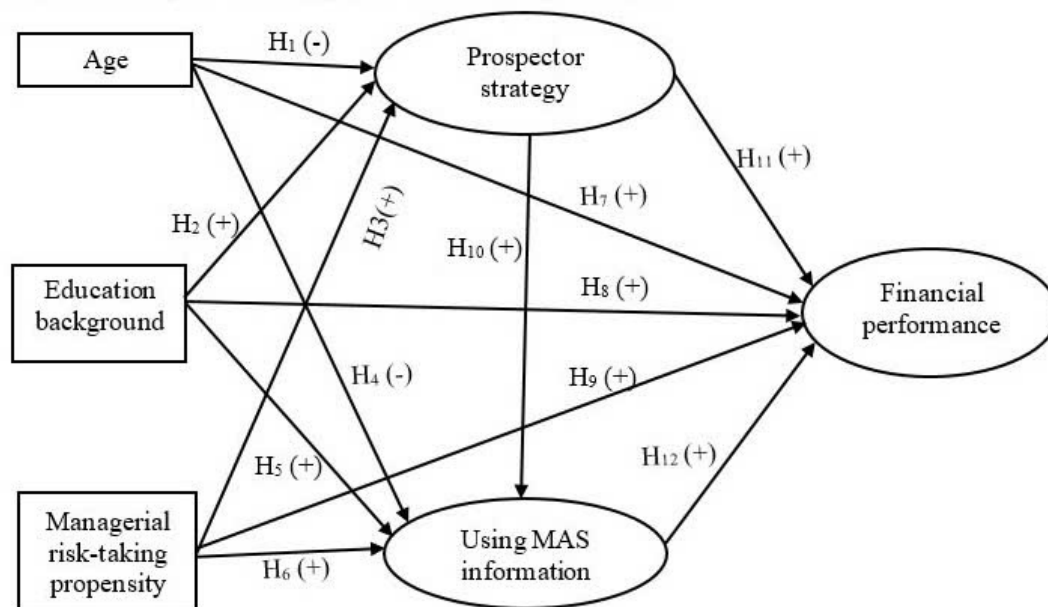


Figure 2: Proposed Research Model. Source: Author's construction.

The sample for data collection consists of medium and large-sized enterprises that operate in the manufacturing sector of Vietnam, as defined by Regulation 56 of the Vietnamese Government. Large and medium-sized enterprises are the only ones with sufficient financial resources to completely operate a MAS and implement an prospector strategy. The survey subjects are top managers who have a high potential to influence the process of planning and implementing organizational strategies, including CEOs, CFOs, Deputy General Directors, based on the conditions of UET. These participants have very difficult access. For this reason, the survey subjects are selected through a combination of convenience sampling methodologies in the study. Upon consenting to partake in the survey, top managers will get a questionnaire via email, derived from the Google Form template.

E-mail surveys and in-person questionnaires were distributed to top managers at manufacturing firms in Vietnam, totaling 800 e-questions and face-to-face questionnaires. Initially, personal contacts were utilized to get the email addresses of top managers, to whom an invitation containing a link to the online survey was dispatched. Top managers who got the invitation consented to participate by clicking the link to the online questionnaire. Secondly, the survey questionnaire was personally distributed to the managers via personal contacts. Every fortnight for one month following the initial invitation, reminder letters were dispatched via email or direct telephone calls were made to solicit responses. Out of 646 top managers who were willing to take part, only 315 submitted the questionnaires; 235 of these participants completed and returned them. Additionally, 10 responses from managers in small enterprises were deleted, and 7 cases outside the manufacturing sector were omitted from the data. A total of 218 instances were utilized for data analysis.

Variable Measurement

Assess age based on the actual age of the top manager [39]. The "educational background" scale measures education in two dimensions: (1) non-business educational orientation and (2) business educational orientation, by calculating the ratio of years of business-oriented education to the total years of education in both dimensions. The closer the educational background index is to 1, the greater the business orientation; conversely, the closer it is to 0, the stronger the non-business orientation. The risk-taking propensity of top managers was assessed using four observational variables derived from the research of Kraiczy, Hack [59]. Behavior of using MAS information, according to research by Agbejule [60]. Prospector strategy based on the scale of Segev [61]. Financial performance measurement based on the scale of Jaworski and Kohli [62] và Calantone, Cavusgil [63], in both scales, a 5-point Likert scale is used to compare the surveyed organization's financial ratios to those of its closest competitors in the same industry.

Analysis Method

SPSS24 software was used to analyze some basic statistics. Partial least squares structural equation modeling (PLS-SEM) was mainly used for path analysis. SmartPLS4 software was used to test the research hypothesis [64]. PLS-SEM is a data analysis methodology that facilitates the examination and interpretation of research models comprising numerous structures and variables [64]. This study employs an empirical research framework, as empirical data is appropriate for constructing and evaluating the suggested model.

The author consistently evaluates the selection of several research methodologies for this study, primarily focusing on three approaches: qualitative

research, quantitative research, and mixed research. The epistemological foundations of the three methodologies diverge, resulting in fundamentally distinct approaches.

- Qualitative research methodology: this approach necessitates the researcher to possess an in-depth comprehension of the research issue, often requiring fieldwork for data collection, with typically small sample sizes [4].
- Quantitative research method: use measures to quantify the acquired data. Data is frequently employed to evaluate hypotheses; hence, this approach is outcome-focused and indicative of human behavior [65].
- The mixed research method employs both aforementioned approaches in a flexible sequence to formulate and evaluate scientific theories [66]. Nevertheless, several notions are unique to manufacturing firms in Vietnam (such as the MAS variable), necessitating a reevaluation and reconstruction of these concepts within the Vietnamese context. The qualitative research method is suitable due to this characteristic. This characteristic indicates that the qualitative research method is employed to analyze documents to identify research gaps, systematize the theoretical framework for constructing a scientific research model, and modify scales to align with the environment and attributes of manufacturing enterprises in Vietnam. The examination of documents seeks to identify the discrepancies in each link between: Demographic characteristics of top manager (Age, educational background, managerial risk-taking propensity) - Strategy (Prospector Strategy) - Using of MAS information - Financial performance. Additionally, it discusses and elucidates the application of UET as the foundational theory for constructing the research model. Furthermore, when the presented hypotheses are numerous, the quantitative research method is suitable. The aforementioned factors indicate that the mixed research methodology is the most appropriate strategy for this investigation.

Results

This presentation initially outlines the characteristics of the statistical sample, then detailing a two-step analysis procedure that includes the evaluation of the measurement model and the structural model.

Characteristics of the Study Sample

The final sample comprised 65% male senior managers and 35% female senior managers, suggesting that male senior managers were nearly twice as prevalent as their female counterparts. The respondents' average tenure was 11.5 years, signifying their enough experience in their roles to provide survey responses on behalf

Table 1: Research Sample Structure

Category	Frequency	%
Gender		
Male	142	65
Female	76	35
Total	218	100
Education background		
Undergraduate	20	9
Graduated	105	48
Master, PhD	93	43
Total	218	100
Tenure		
1–5 years	27	16
6–10 years	52	32
11–15 years	40	24
15–20 years	36	22
> 20 years	9	5
Total	218	100
Age		
18–29	11	5
30–49	73	33
50–64	109	50
> 64	25	12
Total	218	100

Source: Author calculated from SPSS 24.0 software.

of their organizations. The sample comprised 9% of respondents possessing less than a college degree, 48% with a college degree, and 43% holding a post-graduate degree. The mean age of responders was 47 years.

Measurement Model

Initially, Harman's single-factor analysis was employed to assess technique bias. This may result in a correlation between the independent and dependent variables [67]. Unrotated factor analysis was performed on all variables (excluding concepts with 1 measurement variable, age and education). The results showed that the variables extracted 7 factors, the total variance extracted of these 7 factors was 70.54%. The first factor accounted for 40.6% of the total variance extracted in the entire model (<50%), so the phenomenon of method bias is not a serious problem [67].

Next, reliability was assessed by Cronbach's alpha coefficient, composite reliability and rhoA coefficient.

Convergent validity is assessed through the outer loading of observed variables and the total variance extracted (AVE).

Table 2 indicates that the Cronbach's alpha coefficient and composite reliability vary from 0.7 to 0.95, while the rhoA coefficient exceeds 0.5, confirming the reliability of the scales used to measure the ideas in the model [64]. The findings of the convergent validity assessment indicated that the loading factors of the variables above 0.7, so confirming that this study satisfied all criteria for convergent validity (Figure 2).

Cross-loading, the Fornell-Larcker criterion, and the HTMT (Heterotrait-Monotrait Ratio) coefficient are employed to evaluate discriminant validity [64]. The cross-loading factor test findings demonstrate that the cross-loading factor in its construct is significantly higher than in other constructs. The Fornell-Larcker criterion results (Table 3) reveal that the square root of the AVE of each construct is greater than the correlation coefficient between them. In addition, the HTMT value (Table 4) is less than one, indicating that the scale has discriminant validity.

The results of running bootstrap 5,000 times demonstrate that the confidence interval of the HTMT value from 2.5% to 97.5% excludes the value 1. Thus, the measurement scale possesses discriminant validity.

Structural Model

The phenomena of multicollinearity is evaluated using the variance inflation factor (VIF). The research model is segmented into three models, each containing one dependent variable due to the presence of several dependent variables [64]. The analytical results indicate that the VIF coefficients for all concepts are below 2, confirming the absence of multicollinearity in the scale.

The coefficient of determination R^2 is employed to assess the predictive capability of the dependent variables. Table 5 indicates that the predictive power of prospector strategy selection and MAS information usage is low (R^2 coefficients of 0.395 and 0.478, respectively), whereas the predictive power of financial performance is significant (R^2 of 0.692) [64]. Furthermore, predictive relevance (Q^2) is employed to assess out-of-sample predictive capability. Table 5 indicates that the Q^2 coefficients of the dependent variables exceed 0.15, demonstrating a moderate level of out-of-sample predictive capability for the model [64].

The bootstrap procedure was implemented 2,000 times in this research to evaluate the regression coefficients' statistical significance [64]. The results of the direct relationships that were included in the model are presented in Table 5. The using MAS information is substantially influenced by the age, education background, and managerial risk-taking propensity of top managers, as indicated by statistical analysis ($p < 0.01$). Moreover, it is worth noting that prospector strategy also exhibits a favorable

impact on using of MAS information ($p < 0.05$). In conclusion, it can be observed that the characteristics of managers, the prospector strategy, and the use of MAS information have a considerable impact on financial performance ($p < 0.01$). However, it is worth noting that the characteristics of age and managerial risk-taking propensity of top managers do not have any impact on financial performance.

The research findings indicated that hypotheses H_1 , H_2 , and H_3 were validated, demonstrating that top managers who are younger, possess business-oriented education background, and exhibit a greater propensity for risk-taking significantly influence the selection of prospector strategy. The results are quite justifiable, given younger managers typically exhibit more endurance and a propensity for risk-taking, making them well-suited for high-risk strategies like prospector strategy. Conversely, business-oriented education background equips managers with confidence and enhances their proficiency in risk management, enabling them to monitor hazards with exceptional efficiency. Moreover, to navigate the intense competitive landscape, younger managers can adeptly identify numerous alternative inputs without compromising quality or effective cost management, while also possessing business acumen and the capacity to exploit opportunities in emerging markets, alongside managers characterized by a high propensity for risk-taking [5, 39]. It is evident that, given the aforementioned characteristics, additional revenue holds significant potential, while costs are likely to be effectively managed, establishing a basis for a prospector strategy that positively influences the enterprise's financial performance (hypothesis H_{11} is accepted).

The findings indicate that the attributes of top managers affect the extent of MAS information utilization (hypotheses H_4 , H_5 , H_6 are validated). As a communication instrument for delivering uniform response solutions across the firm, MAS information is interpreted and utilized variably by top managers based on their attributes. Conversely, MAS information is highly beneficial for risk management, particularly when a firm adopts a high-risk strategy characterized by several innovations, such as a prospector strategy [53]. Consequently, an increase in the utilization of MAS information—characterized by younger age, business-oriented education background, and a heightened propensity for managerial risk-taking - enhances the financial performance of the organization (hypothesis H_{12} is accepted).

Age and managerial risk-taking propensity do not directly influence the organization's financial success (Hypotheses H_7 and H_9 are rejected). Consequently, according to the principles governing mediating factors in PLS-SEM research, it is evident that prospector strategy serves as a mediator in the association between manager's traits and the extent of MAS information use (Hair et al., 2016). Enhancing the correlation between prospector strategy selection and the extent of MAS information using (Hypothesis H_{10} is

Table 2: Reliability and Convergent Validity Coefficients of the Scale

Constructs	Cronbach's alpha	Composite reliability	rhoA	AVE
1. Managerial risk-taking propensity	0,802	0,871	0,806	0,628
2. Prospector strategy	0,917	0,934	0,918	0,668
3. Using of MAS informantion	0,951	0,956	0,952	0,563
4. Broad scope	0,923	0,939	0,923	0,721
5. Timeliness	0,916	0,941	0,916	0,799
6. Aggregation	0,877	0,924	0,878	0,803
7. Integration	0,899	0,930	0,899	0,803
8. Financial performance	0,885	0,915	0,886	0,684

Source: Author's calculation from SmartPLS4 software.

Table 3: Fornell–Larcker Criteria

Research concepts	1	2	3	4	5	6	7	8	9	10
1. Financial performance	0,82									
2. Education background	0,57	1,00								
3. Prospector strategy	0,68	0,40	0,81							
4. Broad scope	0,52	0,44	0,49	0,85						
5. Using MAS information	0,62	0,42	0,52	0,84	0,75					
6. Age	-0,36	-0,14	-0,44	-0,33	-0,47	1,00				
7. Integration	0,53	0,32	0,43	0,60	0,86	-0,40	0,87			
8. Timeliness	0,54	0,33	0,41	0,55	0,85	-0,46	0,70	0,89		
9. Aggregation	0,52	0,33	0,44	0,64	0,86	-0,46	0,70	0,72	0,89	
10. Managerial risk-taking propensity	0,49	0,31	0,52	0,51	0,57	-0,42	0,45	0,53	0,46	0,79

Source: Author's calculation from SmartPLS4 software.

Table 4: Heterotrait–Monotrait Ratio

Research concepts	1	2	3	4	5	6	7	8	9
1. Financial performance									
2. Education background	0,61								
3. Prospector strategy	0,76	0,42							
4. Broad scope	0,58	0,46	0,53						
5. Using MAS information	0,68	0,44	0,56	0,91					
6. Age	0,39	0,15	0,46	0,34	0,48				
7. Integration	0,60	0,34	0,48	0,66	0,93	0,42			
8. Timeliness	0,60	0,35	0,45	0,61	0,91	0,49	0,77		
9. Aggregation	0,59	0,35	0,49	0,72	0,95	0,50	0,79	0,81	
10. Managerial risk-taking propensity	0,58	0,35	0,61	0,59	0,66	0,48	0,53	0,62	0,55

Source: Author's calculation from SmartPLS4 software.

Table 5: Results of Testing Research Hypotheses

Relationships	Coefficient	t-value	p-value	Hypotheses
H_1 : Age $\rightarrow$ Prospector strategy	-0,259	4,522	0,000	Accepted
H_2 : Education background $\rightarrow$ Prospector strategy	0,264	5,578	0,000	Accepted
H_3 : Managerial risk-taking propensity $\rightarrow$ Prospector strategy	0,340	5,227	0,000	Accepted
H_4 : Age $\rightarrow$ Using of MAS information	-0,233	3,922	0,000	Accepted
H_5 : Education background $\rightarrow$ Using of MAS information	0,224	3,753	0,000	Accepted
H_6 : Managerial risk-taking propensity $\rightarrow$ Using of MAS information	0,320	3,000	0,003	Accepted
H_7 : Age $\rightarrow$ Financial performance	-0,005	0,088	0,930	Rejected
H_8 : Education background $\rightarrow$ Financial performance	0,282	5,104	0,000	Accepted
H_9 : Managerial risk-taking propensity $\rightarrow$ Financial performance	0,023	0,544	0,587	Rejected
H_{10} : Prospector strategy $\rightarrow$ Using of MAS information	0,164	2,198	0,028	Accepted
H_{11} : Prospector strategy $\rightarrow$ Financial performance	0,426	6,309	0,000	Accepted
H_{12} : Using of MAS information $\rightarrow$ Financial performance	0,262	4,255	0,000	Accepted

R^2 Prospector strategy = 0,395; R^2 using of MAS information = 0,478; R^2 financial performance = 0,629. Q^2 Prospector strategy = 0,257; Q^2 using of MAS information = 0,263; Q^2 financial performance = 0,421.

Source: The author conducted the evaluation using SmartPLS4 software.

accepted). Consequently, enhancing the organization's financial performance through the correlation of investigation strategy selection, management accounting system information using, and financial performance.

Conclusion and Implications

Conclusion

This study assessed the influence of CEO, Director, and General Director characteristics - pecifically age, educational background, and managerial risk-taking propensity – on top managers' decision-making regarding prospector strategy, the using of MAS information, and the resulting impacts of these factors on financial performance in Vietnamese manufacturing enterprises.

The influence of age, educational background, and management risk-taking propensity characteristics directly and significantly affects the selection of prospector strategy. The attributes of the top management exert a significant and critical impact on the selection, planning, and implementation of strategies, particularly on the prospector strategy examined in this study. Supporting the theoretical framework proposed by Hambrick [14].

The implementation of the selected prospector strategy, as well as the performance of the manufacturing enterprise management duties of top managers, is effectively supported by a complex administrative system like MAS. Information obtained from MAS can be regarded as a tool for top managers to implement their strategies, as it is of a highly superior nature. Consequently, the current study contributes to the existing body of literature by demonstrating a positive correlation between the MAS information

using behavior of top managers in the Vietnamese economy, their managerial risk-taking propensity, their educational background, and their age. In particular, MAS information is even more valuable to manufacturing enterprises that operate in a rapidly changing and conditionally influenced business environment, such as Vietnam.

The association between educational background and financial performance was investigated. The result was positive and substantial, implying that top managers with a greater entrepreneurial educational background have a more direct impact on manufacturing organizations' financial success. The current study verifies earlier research findings and adds to the evidence that educational background influences firm financial performance [14, 53].

The examination of the relationship between prospector strategy selection, top managers' usage of MAS information, and financial success reveals strong and favorable correlations. The findings indicate that increased using of MAS information by top managers in decision-making and execution of the selected prospector strategy correlates with improved financial performance. Additional evidence demonstrating the alignment between strategy and MAS will enhance financial performance; this finding corroborates the previously established association between strategy, MAS, and organizational performance [33, 69, 70].

Theoretical Implications

This study reinforces prior findings and adds to our understanding of associated challenges. First, Hiebl [17] advises using UET to investigate behavior use of MAS information in specific circumstances. The number of such studies is quite restricted, particularly

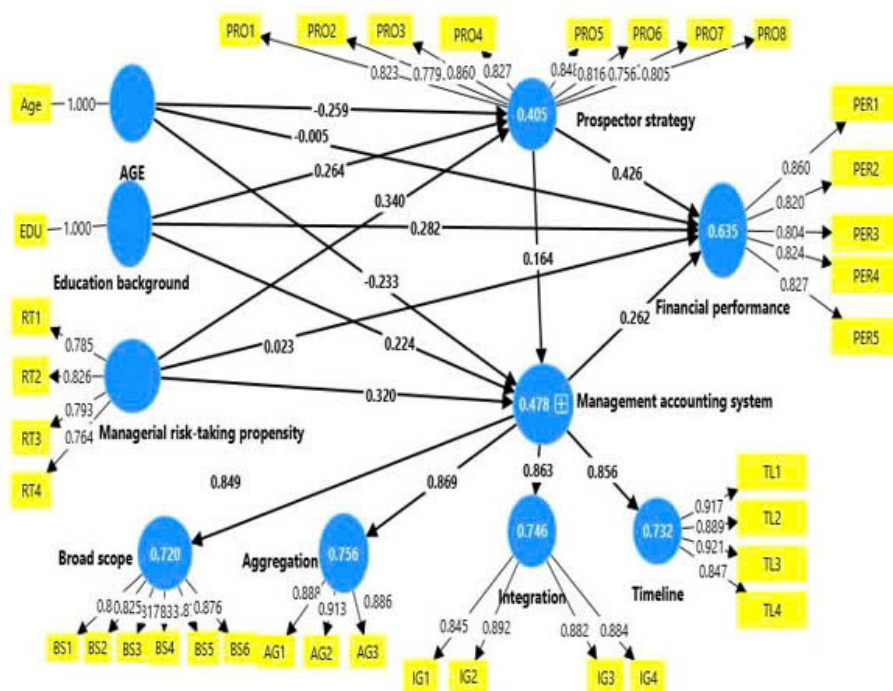


Figure 3: Results of Theoretical Model Analysis Using PLS-SEM. Source: Author processed from SmartPLS4 software.

in developing economies [5, 53, 66]. This study adds to existing knowledge by giving evidence regarding how personal traits influence top managers' MAS information usage behavior in the Vietnamese environment

It first adds to the theoretical stream of research on the relationship between the organization's financial performance [14], the use of MAS [14, 17], and the top management traits that directly influence the choice of prospector strategy [14, 34]. The findings of the study once again demonstrate that the appropriateness of the prospector strategy and top management traits, as well as the degree of MAS information utilization, will significantly affect the organization's financial performance. With the exception of the direct relationship between age and managerial risk-taking propensity psychology and financial performance, which is in line with the findings of [14] and Bertrand and Schoar [71], all research hypotheses were accepted. The study came to the conclusion that organizational performance is dependent on the effectiveness of the prospector strategy and is not directly impacted by age or risk-taking propensity. As a result, the results above support Hambrick and Mason's (1984) original hypothesis regarding UET.

Second, the findings of this study confirm the favorable impact of prospector strategy selection on organizational financial performance, which is consistent with earlier research [33, 70]. Similarly, Rasid, Isa [43] found that when operating in a risky environment, managers should use MAS information to lower the risk of their prospector strategy. In an unstable operational environment, top managers' use of MAS information on four dimensions is determined by their demographic and psychological traits.

This study addresses the limitations of prior re-

search by integrating demographic characteristics and psychological, marketing, and accounting traits with age, education, risk-taking psychology of top managers, prospector strategy (a marketing variable), and the extent use of MAS information (an accounting variable) within the same research model. This is highly beneficial for organizations and managers when developing an efficient MAS within the organization. This research, grounded in UET, enhances theoretical development in management accounting.

Lastly, the majority of the prior research has been conducted in Western countries, with only a handful of studies that have concentrated on Asian countries [66]. Consequently, this investigation makes a valuable contribution to the body of research on the use of MAS information in Asian nations, with a particular emphasis on Vietnam, a nation with a dynamic and rapidly developing economy.

Managerial Implications

This study has numerous managerial ramifications. First, top managers' educational backgrounds are a necessary condition for directly improving an organization's financial performance, which can be combined with a preference for a prospector strategy and a high level of MAS information use to create suitable conditions for achieving higher organizational performance. The research findings will assist top management in better understanding the possible applications of MAS to improve organizational performance, particularly the usage of MAS to support the implementation of the selected prospector strategy. As a result, organizations may better adapt their usage of MAS to a given strategy. Specifically, this study has high practical significance because it provides some

implications to help top managers understand how to develop competitive advantage by designing and using MAS information that is appropriate for their characteristics, as well as a MAS that is appropriate for the prospector strategy selected by top managers. In particular, the chosen strategy and MAS information presented to managers must be appropriate for the demographic characteristics (age, education) and risk-taking propensity of top executives. As a result, the organization's financial efficiency will improve.

Second, when implementing the prospector strategy, MAS information will provide top managers in manufacturing businesses with relevant information (a broad range of future projections, rapid synthesis and integration). As a result, selecting Vietnamese manufacturing businesses to research the use of MAS information is critical. Furthermore, in Vietnam, there has been little emphasis paid to the relationship between top management characteristics, prospector strategy selection, and the using of MAS information in Vietnamese manufacturing businesses. This result demonstrates that successfully using MAS information can improve organizational performance across manufacturing businesses, generating circumstances to attract foreign enterprises.

Third, top managers will help manufacturing companies operate and grow in a dynamic business environment. As a result, this outcome helps Vietnamese manufacturing businesses develop a top management team that aligns with their company's strategic objectives. In particular, the study suggests that changes in executive roles (CEO, General Director, Director) will have an impact on manufacturing businesses' operations and financial performance.

Fourth, the study underlines the significance of MAS in giving information important to the implementation of the organization's strategy. Organizations using a probing strategy must stress competitors' positions and information (on their actions, market share, and products). Such information requirements will be better satisfied with MAS information, particularly broad-based information. The need for comprehensive, integrated knowledge among top executives would assist businesses in improving relationships between departments, teamwork, information exchange, and so on, so generating favorable working circumstances in manufacturing enterprises.

Fifth, the study's findings will assist upper management in an organization in better understanding the potential benefits of MAS information usage behavior in improving the organization's financial performance, particularly with regard to MAS information on four dimensions and its role in strategy implementation. As a result, they can match MAS information usage behavior to a certain strategy.

Sixth, for manufacturing enterprises, flexibility and innovation in the production process refer to the ability of manufacturing enterprises to respond to market demand by innovating or changing the production

of one product to the production of another through policies and coordinated actions in order to be capable and always ready to create differentiated products [40]. The prospector strategy does not prioritize long-term manufacture of a standard product or investment in mass manufacturing technological processes [34]. Instead, the prospector strategy in manufacturing firms focuses on customer satisfaction, innovative product development, and high adaptability. This finding underlines the superiority of prospector strategy for top managers in Vietnamese manufacturing organizations to consider for their businesses.

Seventh, in order to better cope with the challenges of selecting and pursuing prospector strategy in Vietnamese manufacturing firms, formal control systems must be established to support the expansion and innovation of new product lines, processes, and markets [72, 73]. To be effective, control must prioritize increasing collaboration and coordination among functional units. These coordination mechanisms must provide a shared means of breaking down functional barriers imposed by the manufacturing firm's organizational structure.

In the dynamic and competitive business landscape, top executives must leverage comprehensive MAS information to enhance their understanding of the external environment and anticipate future developments. This synthesis and timely dissemination of MAS information will facilitate more effective decision-making, thereby improving the financial performance of Vietnamese manufacturing enterprises. Consequently, Vietnamese manufacturing firms should develop MAS matched to top manager's characteristics that will allow executives to enhance the financial performance of their organizations.

The findings of this study may offer managerial insights for corporate executives. For instance, if shareholders or boards of directors in the Vietnamese manufacturing sector support for a risk-taking strategy, they may recruit or appoint younger CEOs with advanced entrepreneurial education and a greater propensity for risk-taking compared to their counterparts.

Future Research Directions

The research possesses certain limitations. This is a cross-sectional study, which does not account for the timing delay in strategy implementation; thus, the selection and execution of strategy cannot instantaneously influence organizational performance, necessitating a longitudinal study. Secondly, organizational performance must incorporate additional indicators, including non-financial metrics such as market share and customer base. Subsequent research should examine additional demographic and psychological traits of top managers, such as homogeneity within the management team and levels of psychological self-confidence etc ...

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Conflict of Interest

There is no conflict of interest in this study.

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