

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY: APPLIED BUSINESS AND EDUCATION RESEARCH

2026, Vol. 7, No. 7, 3212 – 3220

<http://dx.doi.org/10.11594/ijmaber.07.07.27>

Research Article

Factors Affecting the Effectiveness of the UC Reward System Toward a Sustainable Motivation Framework for Student Success

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Article history:

Submission 05 June 2026

Revised 14 July 2026

Accepted 23 July 2026

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ABSTRACT

Reward systems are commonly applied in tertiary institutions, although their effectiveness in maritime colleges has seldom been empirically evaluated. In this study, the UC Reward System, an academic incentives scheme implemented at the University of Cebu Maritime Education and Training Center for almost two decades, is analyzed in terms of its effectiveness and its external variables in relation to the academic perseverance and academic performance of third-year cadets. The quantitative descriptive-correlational approach was used. Survey questionnaire and document review of the academic records of 236 third-year cadets served as sources of data, with the use of Pearson product-moment correlation to analyze the relationships among the variables. Cadets regarded the reward system as effective, more so in its performance aspect than its perseverance aspect. However, the results of the correlations yielded a different finding, with only the perseverance-oriented aspect of perceived effectiveness significantly correlated with actual perseverance behavior, but not with academic performance. As for the factors, intrinsic motivation and institution-related factors were found to be significantly related to academic perseverance, while extrinsic motivation, despite having the highest endorsement score of all motivational orientations, is not significantly related to any of the outcomes. Institution-related factors, on the other hand, is the sole variable significantly related to both outcomes. It may be concluded that the institutional context around a reward system makes for greater contribution to cadet outcomes compared to the motivational orientations of the cadets. Sustainable Motivation Framework for Student Success is proposed as the framework of this study, with institutional support as the base, the reward system and intrinsic motivation as the active elements, and perseverance and performance as parallel outcomes.

Keywords: *academic performance, academic perseverance, institutional support, maritime cadets, maritime education, Philippines*

Introduction

An industry such as that of maritime operations requires a constant influx of qualified officers, which places the burden of preparing cadets in accordance with the international standards of competency on

How to cite:

Polistico, D. B. (2026) Factors Affecting the Effectiveness of the UC Reward System Toward a Sustainable Motivation Framework for Student Success. *International Journal of Multidisciplinary: Applied Business and Education Research* 7(7), 3212 – 3220. doi:10.11594/ijmaber.07.07.27

maritime higher education institutions (International Maritime Organization, 2021). In the case of the Philippines, one of the largest sources of seafarers in the world, such a burden is augmented by national development priorities in the maritime sector (Maritime Industry Authority, 2024). While regulatory compliance sets minimum conditions for the achievement of success by the students, academic challenge and attrition tend to grow as the students progress towards more challenging parts of their maritime education (Lau & Ng, 2015), thus raising the question of supporting motivation and perseverance of the cadets.

Academic motivation is typically approached using Self-Determination Theory, differentiating between intrinsic motivation – engagement in learning activities driven by interest and enjoyment – and extrinsic motivation, or engagement in learning activities due to external incentives, such as financial reward and career advancement (Deci & Ryan, 1985; Ryan & Deci, 2020). Students in Philippine maritime programs come with high levels of extrinsic motivation tied to career interests (Acabal et al., 2024; Mendoza et al., 2024), but sustained engagement through the years of difficult training seems to require intrinsic forms of motivation, especially if autonomy, competence, and relatedness are encouraged (Davy & Noh, 2016; Hjellvik & Mallam, 2023). Perseverance, meanwhile, has been established as a significant predictor of academic performance (Credé et al., 2017; Duckworth et al., 2007); according to Philippine researchers, it can be fostered not by intrinsic motivation alone, but rather by institutional support and relatedness (Datu, 2017; Datu et al., 2019).

Institutional reward systems represent the means of controlling motivation. Rewards affect the actions of individuals if they are seen as just, open, and in accord with student interests (Chen, 2023; Kuvaas et al., 2017), and in maritime programs, institutional implementation context affects engagement in training activities (Sánchez-Beaskoetxea et al., 2019). School-related factors more broadly have been identified as key determinants of maritime students' academic performance in the Philippine context (Atienza et al., 2017; Ramos, 2024). What remains largely absent

from this literature is the empirical evaluation of long-standing, institution-wide academic reward systems within maritime higher education institutions. Most maritime motivational research has focused on discrete environments such as simulator training, and most reward-system research has been conducted in general education contexts.

The UC Reward System at the University of Cebu Maritime Education and Training Center (UC-METC) provides an appropriate setting for such an evaluation. Established in 2006, the system covers academic scholarships, tuition fee discounts, book and allowance support, and cash-based incentives for high academic achievement (University of Cebu, n.d.). The system has operated for nearly two decades without a formal empirical evaluation of its effectiveness in shaping academic perseverance and academic performance. The research sought to fill this gap through analyzing the perception of the effectiveness of UC Reward System among third year cadets who are at the terminal academic stage prior to the shipboard training. This was done by determining the level of perseverance of the academically inclined and also their academic performance. This was followed by evaluation of the students' related and institutional related factors around the reward system. It concluded by testing the relationships between the variables under study.

Materials and Methods

Research Design

The study used a quantitative descriptive correlational design. The descriptive component established the respondents' perceived effectiveness of the UC Reward System, their levels of academic perseverance and academic performance, and the student-related and institutional-related factors affecting the system. The correlational component tested the relationships between the perceived effectiveness dimensions and the outcome variables, and between the factors and the outcome variables, without manipulating any variable.

Respondents

The respondents were the 236 third-year Bachelor of Science in Marine Transportation

and Marine Engineering cadets of UC-METC enrolled in the second semester of Academic Year 2025-2026. Total enumeration was used, with eligibility criteria defining the target population as all officially enrolled third-year cadets. Third-year cadets were selected because they occupy the terminal academic phase of the program and have had the longest exposure to the UC Reward System before proceeding to onboard training.

Instrumentation

Data were collected using a self-constructed survey instrument composed of four parts: a demographic section; a 20-item Perceived Effectiveness of the UC Reward System scale with two components including academic perseverance and academic performance; a 10-item Academic Perseverance Scale which was based on an adaptation of perseverance scales derived from the research of Duckworth et al. (2007); and a 30-item Factors Affecting the Effectiveness of the UC Reward System scale consisting of intrinsic motivation, extrinsic motivation, and institution-related factors. All scale items utilized a four-point Likert scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree). The academic performance of students was evaluated in terms of their General Weighted Average (GWA) extracted from academic transcripts upon the submission of a formal letter of request to the Dean of UC-METC.

Validity and Reliability

Content validation of the instrument was done by three experts in nautical education and research while reliability test involved thirty third year cadets who did not participate in the main survey. Acceptable Cronbach's alpha coefficient was 0.70 or above (Taber, 2018). Reliability was again assessed in the main sample ($n = 236$), and all six scales showed high reliability: Perceived Effectiveness in terms of Academic Perseverance ($\alpha = 0.826$), Perceived Effectiveness in terms of Academic Performance ($\alpha = 0.836$), Academic Perseverance Scale ($\alpha = 0.842$), Intrinsic Motivation ($\alpha = 0.829$), Extrinsic Motivation (α

$= 0.804$), and Institutional-Related Factors ($\alpha = 0.813$).

Data Gathering and Ethical Considerations

Data collection involved use of the Microsoft forms website, with the form being sent out via emails and chat groups of specific sections to the eligible cadets. Informed consent was sought from the participants and data collected was subjected to the ethical principles outlined by the PMMA Graduate School and UC-METC.

Data Analysis

The frequencies, percentages, mean and standard deviation have been employed for data description. The meaning of mean was determined with the help of an interval of equal width on the scale of four points (3.25-4.00 Very High; 2.50-3.24 High; 1.75-2.49 Moderate; 1.00-1.74 Low). The labeling of effectiveness scales was done accordingly: Very Effective, Effective, Moderately Effective and Less Effective. Correlations were calculated using the Pearson product-moment correlation at $\alpha = 0.05$. Interpretation of the correlations was made according to Hinkle et al. (2003).

Result and Discussion

Descriptive Results

Table 1 shows the descriptive results of the study variables. The respondents found the UC Reward System as an Effective reward system in both dimensions. They have more support for the performance dimension ($M = 3.21$) compared with the perseverance dimension ($M = 2.92$). In terms of item rating, the high rated items can be seen as those which concern on academic outputs such as GWA, distinction, and qualifications; while the low rated items were those that focus on process supports for students who pursue academic outputs. It is important to note that there are clear distinctions between the outputs (e.g. academic performance, academic achievement and recognition) and the processes (e.g. academic effort over time); the current perception of the reward system is more on a recognition program of outputs rather than a support system of process that leads to outputs. This can be because reward systems

usually tend to emphasize performance qualifications and incentives rather than the process supports in communication to students.

Table 1. Descriptive Summary of the Main Variables of the Study (n=236)

Variable	Mean	SD	Interpretation
Perceived effectiveness: academic perseverance	2.92	0.79	Effective
Perceived effectiveness: academic performance	3.21	0.76	Effective
Academic perseverance	3.11	0.80	High
Academic performance (Percentage equivalent of GWA)	84.30	6.73	Good
Intrinsic motivation	3.24	0.75	High
Extrinsic motivation	3.26	0.73	Very High
Institutional-related factors	2.77	0.82	High

Note. Variables using scale were ranked from 1 to 4 and categorized according to: 3.25–4.00 Very High (Very Effective); 2.50–3.24 High (Effective); 1.75–2.49 Moderate (Moderately Effective); 1.00–1.74 Low (Less Effective). On the other hand, the GWA percentage equivalent is used for the academic performance and was then interpreted using the UC-METC transmutation guide.

The respondents indicated their high academic perseverance ($M = 3.11$), particularly regarding the strength of their endorsements for items involving perseverance at the program level, and under conditions of academic difficulty, whereas their endorsement was relatively low for long-term consistency, across multiple semesters. These results are in line with the results of the perseverance literature, in which perseverance was identified as a predictor of various academic outcomes in diverse settings (Credé et al., 2017; Duckworth et al., 2007), and perseverance of effort as an enduring academic disposition in collectivistic environments closer to the one found in the Philippines (Datu et al., 2019). Academic performance was categorized as Good ($M = 84.30$, $SD = 6.73$), implying that the cohort starts its final academic year ready for onboard training, as well as consistent with the competitive academic performance in other Philippine maritime educational institutions (Ramos, 2024).

Among the factors, extrinsic motivation got the highest score ($M = 3.26$, Very High), with the most strongly endorsed items being career-related and future-oriented (e.g., future salary, securing the future) rather than institution-based. It is consistent with the highly career-oriented attitudes reported

throughout the literature on maritime education (Lau & Ng, 2015; Mendoza et al., 2024). Intrinsic motivation received the rating of High ($M = 3.24$), with the items indicating autonomous learning and competence-based learning entering the Very High range, similar to the dimensions identified by Self-Determination Theory (Ryan & Deci, 2020). Institutional-related factors had the lowest score of the three factors ($M = 2.77$) with the lowest items referring to whether deserving students usually get recognition and whether Scholarship Office staff provide correct information. Both items relate to follow-through, which is the question of whether the system, once designed, actually delivers what it promises to the cadets who qualify.

Perceived Effectiveness and the Outcome Variables

Table 2 presents the relationships between the two perceived effectiveness dimensions and the outcome variables. Perceived effectiveness in terms of academic perseverance had a moderate positive significant relationship with academic perseverance ($r = 0.323$, $p < 0.001$), while perceived effectiveness in terms of academic performance did not ($r = 0.049$, $p = 0.451$). Neither dimension was significantly related to academic performance.

Table 2. Relationship Between the Perceived Effectiveness of the UC Reward System and the Outcome Variables

Variables	r	p-value	Interpretation	Decision
Perceived effectiveness (perseverance) and academic perseverance	0.323	< 0.001	Moderate positive	Significant
Perceived effectiveness (performance) and academic perseverance	0.049	0.451	Low positive	Not significant
Perceived effectiveness (perseverance) and academic performance	0.004	0.951	Low positive	Not significant
Perceived effectiveness (performance) and academic performance	-0.021	0.748	Low negative	Not significant

Note. Pearson product-moment correlation tested at $\alpha = 0.05$. Interpretation of r-values: ± 0.01 – ± 0.25 = Low; ± 0.26 – ± 0.50 = Moderate; ± 0.51 – ± 0.74 = High; ± 0.75 – ± 0.99 = Very High; ± 1.00 = Perfect (Hinkle, Wiersma, & Jurs, 2003). The positive or negative sign indicates the direction of the relationship.

It is worth noting that this finding may appear to contrast with the descriptive results, where the respondents endorsed the performance-oriented dimension more strongly than the perseverance-oriented dimension. The two sets of findings, however, measure different aspects of the reward system. The descriptive results capture the cadets' perception of the system's effectiveness, while the correlational results capture the relationship between that perception and the cadets' actual academic behavior. The two can diverge: cadets may perceive a particular dimension of the system as more effective in concept, while a different dimension is the one that most closely corresponds to their actual perseverance. The present results indicate this is the case in the cohort, with the perseverance-oriented framing of the reward system more closely linked to actual perseverance behavior than the performance-oriented framing, even though the latter received the higher descriptive endorsement.

These findings corroborate those in the reward-system literature where the importance of appreciating effort is highlighted. According to Chen (2023), reward systems that incorporate effort are especially successful in fostering long-term academic motivation. Lack of correlation between both dimensions of perceived effectiveness and

academic performance indicates that the reward system plays a greater role in motivating long-term academic effort than in impacting academic performance. This is consistent with the view that incentives tend to produce stronger behavioral than outcome effects when grades are influenced by many additional factors (Locke & Latham, 2002), and with the broader observation that maritime cadets' academic performance is shaped by a range of school-related factors of which reward systems form only one component (Atienza et al., 2017).

Factors and the Outcome Variables

Table 3 presents the relationships between the student-related factors (intrinsic and extrinsic motivation) and the institutional-related factors and the outcome variables. Intrinsic motivation had a low positive significant relationship with academic perseverance ($r = 0.217$, $p < 0.001$), and institutional-related factors had a moderate positive significant relationship with academic perseverance ($r = 0.340$, $p < 0.001$). Extrinsic motivation was not significantly related to academic perseverance ($r = 0.026$, $p = 0.695$). For academic performance, only institutional-related factors showed a significant relationship ($r = 0.169$, $p = 0.009$).

Table 3. Relationship Between the Student- and Institutional-Related Factors and the Outcome Variables

Variables	r	p-value	Interpretation	Decision
Intrinsic motivation and academic perseverance	0.217	< 0.001	Low positive	Significant
Extrinsic motivation and academic perseverance	0.026	0.695	Low positive	Not significant
Institutional-related factors and academic perseverance	0.340	< 0.001	Moderate positive	Significant
Intrinsic motivation and academic performance	-0.033	0.613	Low negative	Not significant
Extrinsic motivation and academic performance	0.045	0.495	Low positive	Not significant
Institutional-related factors and academic performance	0.169	0.009	Low positive	Significant

Note. Pearson product-moment correlation tested at $\alpha = 0.05$. Interpretation of r-values: ± 0.01 – ± 0.25 = Low; ± 0.26 – ± 0.50 = Moderate; ± 0.51 – ± 0.74 = High; ± 0.75 – ± 0.99 = Very High; ± 1.00 = Perfect (Hinkle, Wiersma, & Jurs, 2003). The positive or negative sign indicates the direction of the relationship.

Despite the very high descriptive level of extrinsic motivation, its absence of association with either outcome suggests that external career-oriented incentives, although widely held, do not necessarily translate into sustained academic engagement or stronger academic results. Of the three factors examined, institutional-related support shows the strongest relationship with academic perseverance, and the correlation is even stronger than that of intrinsic motivation. This is a notable finding, given that institutional-related factors returned the lowest descriptive ratings of the three. While institutional-related factors are rated lower in absolute terms than student-related factors, they correlate more strongly with both outcomes. These results suggest that even modest improvements in institutional support may lead to substantial gains in cadet perseverance and performance.

These findings are consistent with Self-Determination Theory (Ryan & Deci, 2020), within which intrinsically motivated and institutionally supported engagement is more likely to translate into sustained behavior than externally driven engagement. Kuvaas et al. (2017) showed that intrinsic and extrinsic motivation relate differently to behavioral outcomes, and that intrinsic motivation is more consistently linked to sustained engagement. The significance of institutional-related factors in relation to academic performance also reinforces the role of institutional support

structures in shaping academic outcomes, consistent with the finding that school climate moderates academic achievement across multiple learner characteristics (Abukasim et al., 2025) and that school-related factors are key determinants of academic performance in the Philippine maritime context (Atienza et al., 2017).

Proposed Sustainable Motivation Framework for Student Success

These findings led to the creation of the Sustainable Motivation Framework for Student Success illustrated in Figure 1 below. The proposed model identifies institutional support as the basis on which cadet achievements are built. This is informed by the finding that institutional factors formed the most consistent correlates to both academic perseverance and academic performance. The UC Reward System and intrinsic motivation are mechanisms that play an active role on top of institutional support; and the perseverance-oriented reward system features prominently following the correlational findings. Parallel, as opposed to sequential, outcomes are assumed for both academic perseverance and academic performance in recognition of the differences in factors that are relevant to each of the outcomes in this specific study. Recognizing the two as parallel outcomes allows the institution the flexibility to apply resources towards building on both outcomes, as opposed to the assumption that improvement in one leads to

the other. The framework does not impose a set of procedures, but rather functions as a tool that enables the institution to assess its own reward system.

The framework is aimed to act as a practical instrument for self-evaluation within administration, so that UC-METC could evaluate its practices of reward system against the factors, proven relevant in this research. From the point of view of the first layer of the framework, there are several issues highlighted by the descriptive part of this research, which should be addressed through certain actions. The first issue pertains to how consistently recognition goes to the deserving students. The institution should solve this problem by developing a list of criteria for rewards publication at the beginning of each semester. Also, the verification process should

be introduced to make sure that all cadets who meet these criteria have been identified, and a simple means should be created for bringing complaints on undeserved lack of recognition. The second issue pertains to the accuracy of the information given to the cadets by the Scholarship Office. This problem could be solved by giving periodic briefings or refreshment training for the employees of the Scholarship Office, creating an information sheet or FAQ about reward criteria and having only one person responsible for answering reward-related queries of the cadets. These measures may enhance the efficiency of reward system among the cadets, because according to the current results, implementation of the institutional reward system, not incentives per se, was consistent with cadet outcomes.

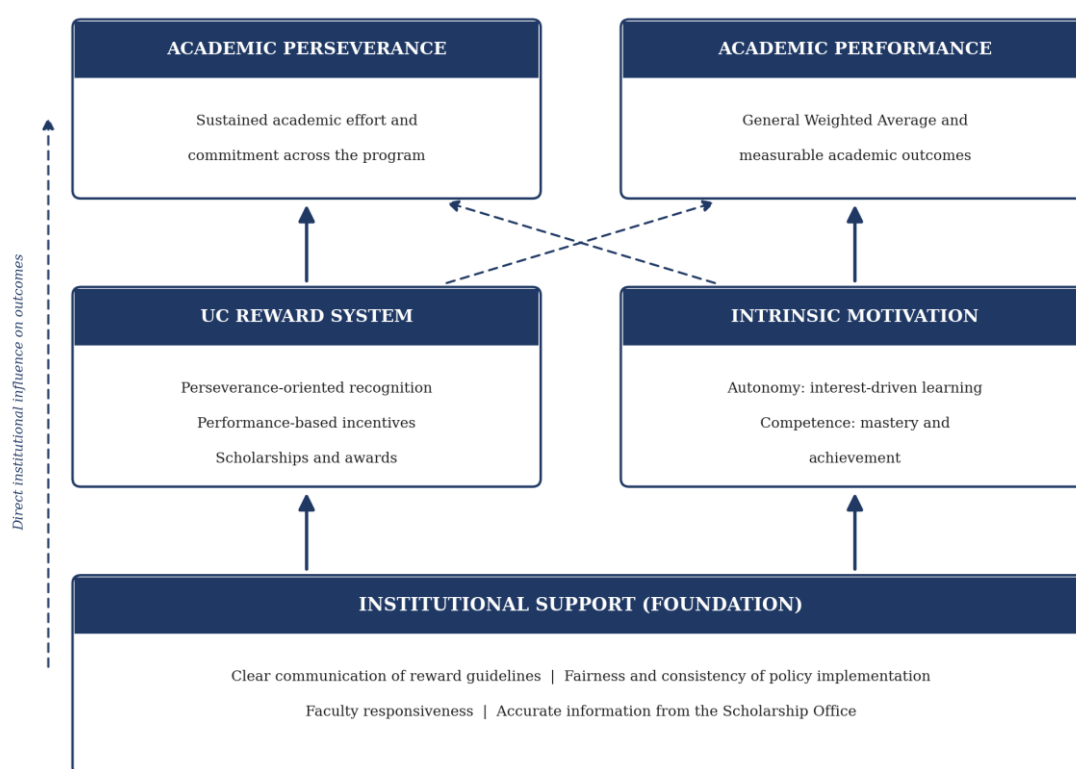


Figure 1. Proposed Sustainable Motivation Framework for Student Success

Conclusion

This study presented an empirical assessment of the relationship between the UC Reward System and the perseverance and performance in academics of third-year maritime cadets from UC-METC. Three

conclusions arise from this study. First, the cadets view the reward system as effective; however, they perceive it as a form of recognition of measurable performance outcomes, while the part of the reward system that matches the behavior of the cadets is the

perseverance-based aspect. Therefore, the institution needs to focus on conveying information about the perseverance aspect of the system, similarly to how the institution conveys information about performance, for example, by using a perseverance-based approach when communicating rewards and during orientation sessions. Second, extrinsic motivation, despite being the most prominent type of motivation of the studied cadets, did not correlate with any of the dependent variables, while intrinsic motivation and institutional support correlated with perseverance. The studied population was already highly motivated; thus, any changes in the institution may prove more productive if they will focus on implementation conditions rather than on motivation. Third, institutional-related factors were found to be significantly associated with both dependent variables. This finding implies that the institutional environment of the reward system impacts cadet outcomes more effectively than any of the motivational orientations of the cadets themselves.

In summary, this study offers the Sustainable Motivation Framework for Student Success, which integrates all three conclusions into one coherent reference that views institutional support as a basis for designing the reward system and motivating students intrinsically and considers perseverance and performance as two parallel outputs. Maritime higher education institutions are offered an example of a successful framework that can help design a reward system that encourages sustained perseverance and not grades. Future research may include a replication of this study in other Philippine maritime institutions to determine the generalizability of the findings, qualitative designs to explore cadet experience with reward systems and institutional support, and longitudinal designs to understand how the variable change over time.

Acknowledgement

The author acknowledges the thesis advisers and panelists from PMMA Graduate School for their guidance during the conduct of this research study, the UC-METC administration for giving permission to use the respondents and their records, and the 3rd Year Cadets of UC-METC for participating in this study.

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