



MOTIVATION, LEARNING STRATEGIES AND PERFORMANCE AMONG BUSINESS UNDERGRADUATES AT UNIVERSITY COLLEGES IN SWEDEN

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Abstract. *Purpose* – This paper brings new material to the understanding of interlinkages between motivation, learning and performance in academic contexts. By investigating these interlinkages in a new context – students of business and management at a Swedish university college – it seeks to answer the following research questions: How do students' degree and type of motivation relate to their learning strategies?; how do students' degree and type of motivation and learning strategies relate to their academic success?; and how do student characteristics in terms of experience and gender influence the nature and strength of these relationships?

Research methodology – The data used in this paper is based on student surveys and a centralised system of reporting and archiving academic results. The latter contains information on the academic performance of individual students, whereas the surveys gathered information on the students' background characteristics (experience and gender), their motivation for pursuing academic studies and their learning strategies. The difference in proportion tests and OLS regressions were then applied to investigate differences between student groups and relationships between the different variables.

Findings – The findings reveal that business students are more extrinsically than intrinsically motivated; that deep learning approaches lead to higher grades for particular examination forms, and that female students are typically more intrinsically motivated, engage more in deep learning approaches and perform better than their male counterparts.

Practical implications – The findings suggest that practitioners in higher education involved with the business and/or university college students have good reasons to stimulate motivation generally, and intrinsic motivation in particular. However, this must be accompanied by examination forms that promote deep learning.

Originality/Value – In contrast to most research, this paper focuses on the interlinkages between motivation, learning and performance among business students in a university college setting. This contrasts most research on this topic which tends to be focused on university students, particularly in the US, in other fields of study or accounting. Moreover, this paper also takes student characteristics into account and uses a variety of measures to operationalise academic performance.

Keywords: academic performance, university college, business students, learning approaches, intrinsic motivation, extrinsic motivation.

JEL Classification: A2, A22.

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Introduction

The relationship between motivation, learning and academic performance is a widely recognised topic which has attracted considerable empirical research. This paper investigates academic students of business and management at a Swedish university college. Swedish universities and university colleges offering higher studies in business education typically award two degrees; the Master of Science in Business Administration (MSc Business) and a more vocationally oriented degree in business called *Civilekonom*. Besides, there are several academic institutions offering supplementary specialisations or specific programs. In this paper, the sample consisted of students from both the MSc Business and the *Civilekonom* degree, as well as students from a business administration program specialised on construction and real estate. This context of the paper allows it to offer new insights on the relationship between motivation, learning and academic performance.

First, there is relatively little research on the link between motivation, learning strategies and academic performance among business students (Vantournout et al., 2012). At the same time, it has been suggested that business students are a breed of their own in terms of motivation, which is claimed to be mainly driven by external rewards such as securing prestigious and high salary jobs (DeMarie & Aloise-Young, 2003; MCEvoy, 2011). This makes motivation and its impact on education a particularly important topic for business schools (Debnath et al., 2007). Indeed, the few studies that focused on business students suggest that their motivation has implications on learning approaches and academic performance (Everaert, Opdecam, & Maussen, 2017; Ariani, 2016; Duff, 2004). Second, the limited research on motivation, learning and performance among business students has predominantly focused on accounting students (Everaert et al., 2017) and in the US (Duff, 2004). Understanding of the topic may, therefore, be particular and specific to those contexts. Third, most academic research on student characteristics has analysed how academic performance differs between genders. The implications of experience are less researched (Vantournout et al., 2012, Duff, 2004), as is the link between these factors and motivation. Fourth, most research on motivation, learning strategies and performance is based on university students. Very few examples (e.g. Yu, Zhang, Nunes, & Levesque-Bristol, 2018; Vantournout et al., 2012) tackle the topic in a university college setting, which itself may raise particular challenges relating to student motivation for academically (as opposed to more vocationally) oriented studies. Fifth, most research (e.g. Byrne, Flood, & Willis, 2002; Sadler-Smith, 1996; Trigwell & Prosser, 1991) rely on relatively narrow definitions of academic performance or single measures, which may omit meaningful relationships between performance, motivation and learning. Finally, most research on motivation, learning and performance is relatively dated about the structural changes toward an increasing number and increasingly diverse body of students that has been ongoing and perhaps reinforced in recent years, both generally and in Sweden (c.f. European Commission, 2013; UHR, 2016). These structural developments pose challenges related to organisation and strategies in higher education (Bennett, 2003; Bowl & Bathmaker, 2016).

This paper thus brings new material to the research of interlinkages between motivation, learning and performance by taking into account gender and experience of business

university college students. It also uses a variety of performance measures. In line with this, the paper seeks to answer the following research questions:

- Q1: How do students' degree and type of motivation relate to their learning strategies?
- Q2: How do students' degree, type of motivation and learning strategies relate to their academic success?
- Q3: How do student characteristics in terms of experience and gender influence the nature and strength of these relationships?

The remainder of this paper is outlined as follows: First, we provide an overview of the current understanding of how motivation and learning strategies are related in academic settings (Section 1). We focus on research from business studies contexts in particular and develop several hypotheses on the relationships between motivation, learning and academic performance. Second, issues relating to data and the methodology used to test the hypotheses are outlined (Section 2). In section 3, we present the results of the empirical analysis and compare them to prior research. Finally, in conclusion, we discuss our findings in the light of the ongoing discussion in higher education, on what type of motivation, learning strategies and examinations one should encourage in order to promote academic performance.

1. Literature review: Motivation, learning and academic performance

This section provides an overview of the literature on motivation (section 1.1), the link between motivation and learning (section 1.2) and the relationships between motivation, learning and academic performance (section 1.3). The section uses prior research (emphasising prior research based on business students, whenever such research is available) and deduction to develop some hypotheses that are subsequently empirically tested. A figure that summarises these hypotheses is provided at the end of the section.

1.1. Motivation

There are various conceptualisations on how academic students' motivation influence their learning, performance, adjustment and well-being (Vansteenkiste, Zhou, Lens, & Soenens, 2005). One such conceptualisation is the self-determination theory (SDT) which seeks to explain people's behaviour by their underlying motivation and the types of goals they pursue (Deci & Ryan, 2000). SDT distinguishes between two types of goals: intrinsic goals which are perceived as necessary in their own right, without consideration of any potential rewards linked to pursuing these goals other than self-fulfilment (i.e. self-development, health, mental fitness, community contribution, affiliation etc.). Extrinsic goals are outward-oriented and relate to acquiring specific properties or characteristics that are perceived to be important in the eyes of others (i.e., wealth, fame, power, status, image, etc.) (Kasser & Ryan, 1996; Williams et al., 2000).

The terminology of extrinsic and intrinsic also provides a terminology to describe various motivation categories, where the degree of self-determination in the regulation of goals and behaviour provides a continuum of motivational categories and subcategories. Intrinsic motivation is marked by pursuing goals that are valued by their significance without any other rewards. This also implies that behaviour is self-determined and regulated without external

pressures (Deci, 1975). Extrinsic motivation includes a range of subcategories which all relate to the pursuit of extrinsic goals, but vary in the extent to which goals and behaviour are autonomous and whether it is motivated by coercion or external rewards.

The least self-determined form of extrinsic motivation is external regulation, which is characterised by behaviour in pursuit of some externally defined goal, requirement or reward. Introjected regulation is associated with pursuing goals to avoid feelings of guilt, self-image anxiety or to attain self-enhancements such as pride. Identified regulation is the conscious pursuit of goals that the person views as characterising his or her personality or identity. Finally, integrated regulation happens when external goals have been fully aligned with one's other values and needs. Actions characterised by integrated motivation share many qualities with intrinsic motivation, although they are still considered extrinsic because they are done to attain separable outcomes rather than for their inherent enjoyment or feeling of well-being itself. Intrinsic and extrinsic motivations and goals are not mutually exclusive, but a particular behaviour or goal may be regulated by both (Deci & Ryan, 1995; Ryan & Deci, 2000).

In research in academic contexts, differentiating between intrinsically and extrinsically motivated students is common (Biggs, 2011). Intrinsically motivated students study their chosen topics primarily to gain knowledge, understanding and satisfying their natural curiosity. In contrast, extrinsically motivated students study to attain other goals than only the learning itself (Vansteenkiste et al., 2006). Within business and management studies, student motivation has primarily been used to understand learning approaches or to explain academic performance (see below). One exception is DeMarie and Aloise-Young (2003) who compared motivation between graduate students within the business and educational studies. Business majors were significantly less likely to explain their choice of studies because of "interest in the area" or "interest in the classes" and significantly more likely to say they picked their major because it would help them "find a job easily" and lead to a "high salary." Arquero et al. (2015) demonstrate similar findings in a comparative study between nursing and accounting students. As suggested by McEvoy (2011), these results indicate that business students may generally be more extrinsically than intrinsically motivated. Based on this reasoning, the following hypothesis is proposed:

H1: Business students are more extrinsically than intrinsically motivated

1.2. Motivation and learning approaches

Higher education students' approaches to learning are often conceptualised as the interaction between the characteristics of the individual student and their perceptions of courses, teaching and assessment procedures (Entwistle, 1990). This paper is based on the well-established concepts of deep and surface learning approaches (Biggs, Kember, & Leung, 2001; Entwistle & Tait, 1990). These are perhaps the most common way to describe and understand how different students learn and study in higher education and are the results of a long period of development and refinement in the literature.

Surface and deep learning approaches are mutually exclusive (Biggs, 1987). Adopting a surface approach means focusing on the essentials to complete a task or meet examination requirements, mostly aiming for avoiding failure at minimum effort. The learning is

characterised by memorisation and reproduction of the material, and as a result, students focus on isolated facts and fail to understand how concepts, themes and similar are related to each other. Deep learning approaches, on the other hand, are oriented towards a deeper understanding of the topic and analytical thinking. Such an approach can be characterised as a personal commitment to learning and an interest in the subject (Biggs, 1987). Students following an in-depth learning approach develop critical thinking and seek to understand how concepts, themes etc. relate to each other. They also seek to grasp how they relate to other areas, experiences or concepts (Ballantine et al., 2008; Duff & McKinstry, 2007; Tang, 1994).

The link between motivation and learning approaches is generally conceptualized as follows: extrinsic motivation is associated with surface learning, while intrinsically motivated students tend to adopt an in-depth learning approach (Lucas & Meyer, 2005). The latter tend to be more dedicated and more genuinely engaged in the materials to be learned (Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004).

Does this mean that extrinsic motivation weakens deep learning? Earlier theories seem to support this notion. External rewards were understood as substitute targets that distract learners from deep learning (Deci et al., 1999; Luyten & Lens, 1981; Vansteenkiste et al., 2004; Niemiec et al., 2006). Extrinsic goals were seen as weakening the learning process, by undermining self-determination, interest and curiosity (Vansteenkiste, Lens, & Deci, 2006). More recent evidence, however, suggests that extrinsic motivation, in combination with intrinsic motivation may promote deep learning (Mo, 2011). Also, extrinsic motivation may trigger intrinsic motivation and thereby strengthen deep learning (Rassuli, 2012) and lead to better academic performance (Tasgin & Coskun, 2018). This is also supported by recent research in a business studies context, where accounting students with high intrinsic and extrinsic motivation tended to be more engaged in deep learning (Everaert et al., 2017). In a study on first-year students in an undergraduate accounting course, intrinsically motivated students were found to have a slightly higher score for deep learning compared to surface learning (Duff, 2004). Taken together, this leads to the following hypotheses:

H2a: Intrinsic motivation among business students is positively related to deep learning approaches

H2b: Extrinsic motivation among business students is positively related to surface learning approaches

H2c: The combination of intrinsic and extrinsic motivation among business students is positively related to deep learning approaches

1.3. Motivation, learning approaches and academic performance

Studies on the link between learning approaches and learning outcomes are numerous (Richardson, 2017; Weber & Patterson, 2000; Watkins & Hattie, 1985; Trigwell & Prosser, 1991; Sadler-Smith, 1996; Duff, 2004; Sun & Richardson, 2016). In general, the relationship between deep learning approaches and outcomes (measured as examination scores or self-perceived learning) is positive (Dong, Bai, Zhang, & Zhang, 2019; Smyth, Mavor, & Plattow, 2017; Chan, 2016; Sakurai, Parpala, Pyhältö, & Lindblom-Ylänne, 2016). For students that adopt deep approaches to learning, analytical and conceptual thinking skills are more

likely to develop, which in turn promote stronger academic performance (Ginns, Martin, & Papworth, 2018; Hall, & Raven, 2004). In a business studies context, several studies (Abhayawansa, Bowden, & Pillay, 2017; Alanzi & Alfraih, 2017; Davidson, 2003) found that deep learning increases academic performance, whereas surface learning does the opposite. The latter is also confirmed by Fryer and Ginns (2018) and Teixeira and Gomes (2017). Everaert et al. (2017) report similar findings among accounting students, even when controlling for time spend and ability. However, sometimes, the relationship is perhaps less intense than expected or even negative (Byrne et al., 2002; Wynn-Williams et al., 2016). This may relate to examination forms being ill-suited to assess those skills and other abilities associated with deep learning.

Prior research also demonstrates that the link between intrinsic motivation and academic performance in higher education is often positive (Eppler & Harju, 1997; Turner, Chandler, & Heffer, 2009). Taylor et al. (2014) conduct a meta-analysis that concludes that intrinsic motivation is the only motivation type to be consistently positively associated with academic achievement, but there are also exceptions (such as Herath, 2015). One reason why more intrinsically motivated student tend to perform better is that they are more likely to adopt deep learning approaches (Lange & Mavondo, 2004).

For extrinsic motivation, the evidence is much more mixed. Pintrich et al. (1993) observed no correlation between this type of motivation and course grades. However, research on business students shows that general motivation affects performance among accounting students, both in terms of course grades (Doran, Bouillon, & Smith, 1991) and in terms of applying knowledge on complex case material (Davidson et al., 1996). For university college students (although not business students), Yu et al. (2018) show that a self-determined (i.e. intrinsic) motivation to choose a major predicts positive outcomes in university college settings.

Taken together, the above findings point towards a positive link between learning approaches and performance on the one hand, and motivation and performance on the other. Does this mean that more (intrinsically) motivated students tend to adopt more in-depth learning approaches and thereby achieve higher academic performance (c.f. Biggs, 2001; Everaert et al., 2017) study on accounting students found that both intrinsic motivation and extrinsic motivation have a significant positive influence on deep learning, which in turn is positively related to academic performance. Conversely, surface learning was associated with lower academic performance. Based on this literature, the following hypotheses are suggested:

H3a: Deep learning is positively related to academic performance among business students

H3b: Surface learning is negatively related to academic performance among business students

H4a: Intrinsic motivation and academic performance in higher education is positively related to business students

H4b: The combination of intrinsic and extrinsic motivation is positively related to academic performance among business students

1.4. Gender

The topic of differences in motivation between genders is extensively studied. Severiens and ten Dam's (1994) meta-analysis of the topic suggests that males tend to report higher extrinsic motivation or similar conceptualisations than females. Approaches to learning and gender differences have also received considerable attention, but findings are mixed (Lange & Mavondo, 2004; Crawford & Wang, 2015). Failing to identify gender differences across learning approaches is common (Richardson, 1993; Wilson et al., 1996), but some studies suggest that males tend to adopt surface learning approach to higher extent than female students, whereas the latter are more likely to adopt deep learning approaches (Sithole, 2018; Gledhill & van der Merwe, 1989; Bigg, 1987).

Research on differences between male and female business students suggests a somewhat different pattern. While many studies also fail in establishing gender differences in learning approaches (Richardson & King, 1991; Byrne & Flood, 2008), female students in accounting have been found to have significantly higher surface approach scores compared to male students (Sadler-Smith, 1996; Duff, 2004). However, Lange and Mavondo (2004) found that male accounting students are more likely to adopt surface learning approaches.

Mixed results also characterise research on gender differences in terms of academic performance. Some research fails to establish any cross-gender patterns (Doran et al., 1991; Buckless, Lipe, & Ravenscroft, 1991; Gist, Goedde, & Ward, 1996; Duff, 2004). Most studies seem to suggest better academic performance among female students (Lipe, 1989; Tyson & Woodward, 1989), whereas the research that finds better performance among male students is more limited (M. Y. Koh & H. C. Koh, 1999). Research that examines gender differences across both learning approaches and academic performance is more limited. Byrne et al. (2002) is an exception and report a positive relationship between deep learning approaches and academic performance for female students. However, any similar relationship for the male student could not be established. Based on these findings, the following hypotheses are developed:

H5a: Deep learning approaches are more common among female students.

H5b: Female students attain better academic results.

1.5. Experience

The general pattern regarding experience and learning approaches suggest that deep learning approaches increase with experience, whereas surface learning approaches diminish. This is due to cognitive sophistication or experience in handling complex situations (Biggs, 1987). Indeed, similar patterns are established in research focusing on learning approaches for business students. Duff (1999, 2004), Sadler-Smith (1996) and Abhayawansa, Tempone, and Pillay (2012) report that mature students are less likely than younger students to adopt surface learning approaches. Other studies (Asikainen & Gijbels, 2017) also show that students tend to adopt more deep learning approaches over time. Despite these findings, research suggests that younger business students tend to perform better (Dockweiler & Willis, 1984; M. Y. Koh & H. C. Koh, 1999) or at least not worse (Bartlett, Peel, & Pendlebury, 1993) than their

fellow older students. Other studies, however, report different results (Postareff, Mattsson, Lindblom-Ylänne, & Hailikari, 2017; Kyndt, Donche, Trigwell, & Lindblom-Ylänne, 2017).

The impact of academic and work experience on motivation, learning approaches and academic performance is less studied. Research on grade-school students suggests that intrinsic motivation drops as students move up the grades, whereas extrinsic motivation remains stable (Lepper, Corpus, & Iyengar, 2005). We have not been able to identify any research on higher education business students. However, one could hypothesise that intrinsic motivation would increase with experience since experience tends to increase autonomous and self-regulatory behaviour (Ryan & Deci, 2000). Conversely, adult life may require a focus on more external rewards, in order to sustain one's standard of living and in some cases, support other family members. Although prior findings are mixed, this paper suggests the following hypotheses:

H6a: Experience is positively related to deep learning approaches

H6b: Experience is not related to academic performance

2. Data and methodology

2.1. Data sample and collection

The total number of students participating in the data collection amounted to 135. Out of these, 56% were first-year students, whereas second-year students represented 44%. These figures represent participation rates of 52 and 53% of all business administration students enrolled. The participating students filled out a survey consisting of 56 questions relating to their background characteristics (age, experience and gender; 6 questions), their motivation for pursuing academic studies (28 questions) and their learning strategies (20 questions). Also, data on academic performance was collected through the Swedish centralised system of reporting and archiving academic results ("Ladok"). In order to enable a cross-match between motivation, learning strategies and academic performance, the questionnaire was not anonymous. However, students were only asked to report their social security system number (and not their names) and were promised complete confidentiality. The questionnaire responses were gathered during classes on four occasions in the 2017 spring semester (25 February – 14 March).

The age of the students ranged between 19–35, with 76% being 25 or younger at the time of the data gathering. In terms of experience, students had taken on average, 3.1 semesters in academic studies and had 2.8 years of work experience. 63.7% of the students were female and 36.3% male, implying that no student considered themselves outside the traditional gender classification. The distribution of the sample across the background variables is shown in Table 1.

2.2.1. Measuring motivation, learning strategies and academic performance

2.2.1 Variables on motivation

Students' motivation was measured using a Swedish translation of the Academic Motivation Scale (AMS-C 28) College (CEGEP) version (Vallerand et al., 1993). All items were rated on a seven-point Likert scale, ranging from "I seldom or never do this" to "I almost always do

this” for processing strategies and from “Completely disagree” to “Totally agree” for regulation strategies and motivational regulations. Each question is referring to a particular type of extrinsic or intrinsic motivation, enabling a calculation of scores for all motivation types in self-determination theory (Vallerand et al., 1993). Annex A provides a key that shows to which motivation type the specific questions in the questionnaire are associated.

Based on the survey results, several motivational variables were constructed. The simplest ones included composite scores for intrinsic and extrinsic motivation by averaging the values of students’ responses on questions about particular motivational forms (c.f. Vansteenkiste et al., 2004). A measure of total motivation was also included to capture students’ who may have the high or low overall motivation, which averages the scores for both motivational types. Tests of internal consistencies displayed acceptable Cronbach’s alpha values for the computed variables (ranging between 0.844–0.782), similar to previous studies such as Vansteenkiste, Zhou, Lens, and Soenens (2005) and Kusurkar et al. (2013).

2.2.2. Variables on learning approaches

Students’ learning strategies were measured using a Swedish translation of the “Revised Two Factor Study Process Questionnaire” (R-SPQ-2F) (Biggs, 1987; Biggs et al., 2001). R-SPQ-2F provides scores relating to students’ deep and surface learning strategies. The questionnaire consists of 20 questions to which answers are provided on a five-point Likert scale. Students were asked to indicate how often they agree with a particular statement or perform a particular activity, with answers ranging from “I seldom or never do this” to “I almost always/always do this”.

We included both deep and surface study strategies in the analysis. Omitting any of these variables would not allow for analysis of whether students who rely heavily on both approaches have different motivational drivers or obtain different academic performance. Vansteenkiste et al. (2005) used a similar approach to create an optimal learning composite from the scores on the LASSI (Learning And Study Strategies Inventory, Vansteenkiste et al., 2005). The results from the survey showed acceptable Cronbach’s alpha values for the computed variables (between 0.711–0.641) (c.f. Biggs et al., 2001).

2.2.3. Variables on academic performance

Performance measurement in prior research has often been operationalised in terms of grades, or grade point averages, final exam grades (Elliot, McGregor, & Gable, 1999; Diseth & Kobbeltvedt, 2010; Byrne et al., 2002; Sadler-Smith, 1996; Trigwell & Prosser, 1991) or drop-out rates (Bennet, 2003). In this paper, we measure ECTSs earned about the number of potential ECTSs for each student, based on the courses any particular student had registered for (P). In addition to total ECTSs, we also include a measure of the relative amount of high pass grades (HP), and for both these variables we distinguish between ECTSs relating to written exams (PW and HPW) and ECTSs relating to other forms of examinations (such as group assignments, essays etc.) (PO and HPO). Since the administrative system does not differentiate between those students passing at the first occasion for examination and those who retook an exam, this factor cannot be covered in the performance variables.

2.2.4. Variables on student characteristics

The survey also included questions on student characteristics: Gender (male, female, other); academic experience measured as a number of semesters in higher education (AcaExperience); work experience transformed into a number of full-time years, where all part-time, seasonal and temporary experiences were included (WorkExperience). Short descriptions of all variables are provided in Table 1.

2.3. Data overview and empirical methods

Table 1 also reports sample sizes, means, and standard deviations of the significant dependent variables measured. It reveals – among other things – that the students who participated in the survey were more extrinsically than intrinsically motivated; that they were more prone

Table 1. Descriptive statistics

Variables	Description	Mean	Median	Min	Max	Std. Dev.	Skew.	Ex. Kurt.
DeepLearning	Deep learning approach	28.72	29.00	10.00	45.00	6.52	-0.03	-0.27
SurfaceLearning	Surface learning approach	25.08	24.00	11.00	46.00	7.03	0.29	-0.40
IntrinsicMotivation	Intrinsic motivation	4.026	4.19	1.50	6.47	1.01	-0.32	-0.40
ExtrinsicMotivation	Extrinsic motivation	5.29	5.41	3.08	7.00	0.83	-0.46	-0.03
TotalMotivation	(Intrinsic Motivation + Extrinsic Motivation)/2	4.66	4.76	2.37	6.44	0.80	-0.53	0.14
Male	Gender	0.36	0.00	0.00	1.00	0.48	0.57	-1.68
AcaExperience	No of semesters in higher education	3.11	3.00	2.00	10.0	1.27	1.57	5.61
WorkExperience	No of years of work experience	2.76	2.00	0.00	13.0	2.69	1.26	1.54
Pass	No. of ECTSs/ Sum of ECTSs registered for	0.69	0.72	0.18	0.92	0.16	-0.96	0.47
HighPass	No. of ECTSs with high pass/Sum of ECTSs registered for	0.29	0.29	0.00	0.71	0.20	0.36	-0.93
PassWritten	No. of ECTSs from written exams/Sum of ECTSs registered for	0.55	0.55	0.08	0.86	0.16	-0.61	-0.03
HighPassWritten	No. of hig pass ECTSs from written exams/Sum of ECTSs registered for	0.26	0.24	0.00	0.67	0.19	0.41	-0.89
PassOther	No. of ECTSs excluding those from written exams/Sum of ECTSs registered for	0.14	0.10	0.00	0.58	0.08	2.69	10.76
HighPassOther	No. of high pass ECTSs excluding those from written exams/Sum of ECTSs registered for	0.03	0.03	0.00	0.35	0.04	4.78	33.76

to use in-depth study strategies; that their average age was 23; that the students had around three years of work experience; and that 64% were females.

The hypotheses were tested using standard statistical methods. The difference in proportion tests was used to determine whether there were any differences in motivational forms, and to see whether these differences also appeared between students based on the control variables. OLS regressions were applied to investigate the relationships between independent and dependent variables. All variables were tested for multicollinearity, which led to the exclusion of the variable age due to too strong correlation with work experience. No regressions displayed heteroscedasticity.

3. Results and analysis

3.1. Differences in motivation

Beginning with within-group motivational characteristics, Table 2 displays differences between intrinsic and extrinsic motivation. Differences for the whole sample and subsamples based on dummy variables for gender. The results support the hypothesis that business students are more extrinsically than intrinsically motivated (H1) for both the whole sample and for the gender subsamples. External motivation exceeded intrinsic motivation at the 1% significance level.

3.2. Motivation and learning

Several regressions were applied to test the hypotheses that link motivation with learning approaches (see Table 3). Regressions 1 and 4 test whether the variables relating to gender and experience in work or studies affect learning approaches. For deep study learning (DeepLearning), gender was not significant. Hypotheses H5a – that deep learning approaches are more common among female students is thus rejected.

The other regressions (2–5) test, whether adding motivational variables enhances the explanatory power compared to the regressions based on gender and experience only. For regressions seeking to explain students' degrees of deep learning approaches, regressions 2 and 3 led to considerable increases in explanatory power when adding the motivational variables IntrinsicMotivation and TotalMotivation to the model. Whereas the baseline regression

Table 2. Differences in intrinsic and extrinsic motivation

	Variable	Mean	± SD	Δ	t-value	p-value	n
Full sample	Intrinsic Motivation	4.025	1.009	-1.268***	-11.257	0.000	135
	Extrinsic Motivation	5.293	0.832				
Male	Intrinsic Motivation	3.814	1.115	-1.250***	-6.257	0.000	49
	Extrinsic Motivation	5.064	0.843				
Female	Intrinsic Motivation	4.146	0.928	-1.277***	-9.658	0.000	86
	Extrinsic Motivation	5.423	0.802				

Note: */**/** denote significance at 10%/5%/1% levels

(Regression 1) had an adjusted r^2 of 0.01, this figure reached 0.41 and 0.24 respectively. Both these variables were found to be statistically significant at the 1%, with IntrinsicMotivation displaying a much stronger impact on DeepLearning.

Taken together, regression 2 lends considerable support to the hypothesis that intrinsic motivation among business students is positively related to deep learning approaches (H2b). Similarly, regression 3 suggest that hypothesis 2c – that total motivation among business students is positively related to deep learning approaches – should be accepted. Finally, experience in academic studies is negatively related to deep learning, after the effects on intrinsic motivation is considered. This lends some support for Hypothesis H6a.

Table 3 also shows the results of the test of hypothesis H2a – that extrinsic motivation among business students is positively related to surface learning approaches. Regression 4 shows that gender can explain the degree to which students engage in surface learning approaches, although the regression is insignificant at the overall level. However, this changes when adding the independent variable measuring extrinsic motivation (ExtrinsicMotivation). This makes the regression overall significant and increases its explanatory power. Besides, it shows that extrinsic motivation is significantly positively related to surface learning approaches.

Table 3. Motivation and learning

Dependent var. Regression #	DeepLearning 1	DeepLearning 2	DeepLearning 3	SurfaceLearning 4	SurfaceLearning 5
n	135	135	135	135	135
Intercept	29.616*** 0.000	13.858*** 0.000	10.805*** 0.001	25.765*** 0.000	17.165*** 0.000
IntrinsicMotivation		4.217*** 0.000			
TotalMotivation			2.053*** 0.000		
ExtrinsicMotivation					1.585** 0.033
Male	-1.611 0.174	-0.092 0.920	-0.204 0.846	2.716** 0.033	3.231** 0.012
WorkExperience	0.237 0.266	0.139 0.396	0.283 0.127	-0.195 0.391	-0.122 0.589
AcaExperience	-0.310	-0.793**	-0.618	-0.364	-0.420
	0.484	0.023	0.114	0.443	0.370
Overall F-test	1.047	24.275***	11.663***	1.869	2.594**
Overall p-value	0.374	0.000	0.000	0.138	0.039
R ²	0.023	0.428	0.264	0.041	0.074
Adj. R ²	0.001	0.410	0.241	0.019	0.045

Note: */**/** denote significance at 10%/5%/1% levels

3.3. Learning and academic performance

Table 4 reveals the empirical results from the regressions of motivation and learning approaches on academic performance. Initially, in Table 4, only gender and experience are included in the regressions (6–11) on the six different variables measuring academic performance. A few observations are noteworthy: All regressions are significant on the overall level; gender and experience have the highest explanatory power on the variables Pass and PassOther (.14 and .37 respectively); academic experience is positively related to all measures of academic performance, whereas work experience is not; and gender matters for all academic performance variables apart from PassOther and HighPassOther. Tests were also performed where dummies for academic programs were included, but not succeeding in establishing statistically significant results. Taken together, this lends considerable support to hypotheses H5b and H6b – that female students attain better academic results, and that experience is not related to academic performance.

In regressions 12–17 reported in table 4, deep learning was added as independent variables to investigate whether deep learning is positively related to academic performance (H3a1–2). Deep learning (regressions 13 and 15) is revealed to have a significant positive impact on academic performance when measured as the percentage of high passes in general and on written exams (HighPass and HighPassWritten), but not for other academic performance variables. Adding these variables also increases explanatory power, even after adjusting for overfitting (reflected in the adjusted r^2). The variables on student characteristics remain the same, with the male still being significantly negative for Pass, HighPass, PassWritten, HighPassWritten and experience of academic studies for all performance variables.

Table 4 also displays the results of the relationship between surface learning and academic performance. While the signs and significances for the gender and experience variables remain unchanged, surface learning fails to achieve statistical significance for all academic performance variables (regressions 18–23). This result offers little support for the hypothesis that surface learning is negatively related to academic performance (H3b).

Turning to the relationship between motivation and academic performance, Table 5 shows regressions of intrinsic motivation on the six academic performance variables. The results indicate that the relationship is not particularly strong, but the relationship is statistically negative for the performance variable Pass. As for the regressions on learning approaches, gender and academic experience are significant. These results strongly reject the hypothesis that intrinsic motivation and academic performance in higher education is positively related (H4a1–2).

Similar results were found when analysing the relationship between the overall levels of motivation with academic performance. In regressions where the independent variable is Intrinsic Motivation, the results are more striking. In particular, regressions 30 and 32 reveal that high motivation is significantly and negatively related to both Pass and PassWritten. These results imply a rejection of the hypothesis that high intrinsic and extrinsic motivation is positively related to academic performance (H4b).

Table 4. Academic performance and learning approaches

Dependent var. n	Pass 135	HighPass 135	PassWritten 135	HighPassWritten 135	PassOther 135	HighPassOther 135
Regression #	6	7	8	9	10	11
Intercept	0.509*** 0.000	0.222*** 0.000	0.487*** 0.000	0.223*** 0.000	0.021 0.152	-0.001 0.910
Male	-0.080*** 0.001	-0.113*** 0.001	-0.084*** 0.002	-0.112*** 0.001	0.004 0.703	-0.001 0.915
WorkExperience	-0.002 0.684	-0.001 0.886	-0.005 0.311	-0.001 0.836	0.003 0.113	0.000 0.764
AcaExperience	0.070*** 0.000	0.041*** 0.006	0.034*** 0.001	0.027** 0.033	0.034*** 0.000	0.009*** 0.001
Overall F-test	22.668***	6.199***	7.490***	5.238***	25.226***	4.378**
Overall p-value	0.000	0.001	0.000	0.002	0.000	0.006
R ²	0.342	0.124	0.146	0.107	0.366	0.091
Adj. R ²	0.327	0.104	0.127	0.087	0.352	0.070
Regression #	12	13	14	15	16	17
Intercept	0.491*** 0.0000	0.066 0.450	0.508*** 0.0000	0.085 0.322	-0.017 0.533	-0.0192 0.2765
DeepLearning	0.001 0.7337	0.005** 0.038	-0.001 0.7298	0.005* 0.063	0.001 0.109	0.0006 0.2283
Male	-0.079*** 0.0015	-0.104*** 0.0027	-0.085*** 0.0021	-0.105*** 0.002	0.006 0.568	0.0063 0.9708
WorkExperience	-0.002 0.6625	-0.0021 0.7285	-0.005 0.331	-0.002 0.698	0.003 0.151	0.0028 0.8556
AcaExperience	0.069*** 0.0000	0.038*** 0.0034	0.034*** 0.0009	0.029** 0.0238	0.034*** 0.000	0.0345*** 0.0004
Overall F-test	16.916***	5.8579	5.6096	4.8815	19.800***	3.6618***
Overall p-value	0.0000	0.0002	0.0003	0.0011	0.0000	0.0073
R ²	0.3423	0.1527	0.1472	0.1306	0.3786	0.1013
Adj. R ²	0.3221	0.1266	0.1210	0.1038	0.3595	0.0736
Regression #	18	19	20	21	22	23
Intercept	0.523*** 0.000	0.289*** 0.000	0.479*** 0.000	0.308*** 0.000	0.044* 0.072	0.007 0.647
SurfaceLearning	-0.001 0.734	-0.003 0.271	0.000 0.859	-0.002 0.417	-0.001 0.237	0.000 0.512
Male	-0.078*** 0.002	-0.106*** 0.003	-0.085*** 0.002	-0.098*** 0.005	0.007 0.552	0.007 0.987
WorkExperience	-0.002 0.667	-0.001 0.821	-0.005 0.321	0.002 0.757	0.003 0.135	0.003 0.803
AcaExperience	0.068*** 0.000	0.035*** 0.007	0.035*** 0.001	0.022* 0.086	0.034*** 0.000	0.034*** 0.001
Overall F-test	16.915***	4.962***	5.584***	4.458***	19.333***	3.378**
Overall p-value	0.000	0.001	0.000	0.001	0.000	0.012
R ²	0.342	0.132	0.147	0.147	0.373	0.094
Adj. R ²	0.322	0.106	0.120	0.114	0.354	0.066

Note: ***/** denote significance at 10%/5%/1% levels

Table 5. Academic performance and motivation

Dependent var. Regression # n	Pass 24 135	HighPass 25 135	PassWritten 26 135	HighPassWritten 27 135	PassOther 28 135	HighPassOther 29 135
Intercept	0.584*** 0.000	0.257*** 0.001	0.566*** 0.000	0.263*** 0.001	0.018 0.475	-0.006 0.707
IntrinsicMotivation	-0.020 0.085	-0.009 0.572	-0.021 0.107	-0.011 0.513	0.001 0.868	0.001 0.701
Male	-0.087*** 0.000	-0.116*** 0.001	-0.092*** 0.001	-0.116*** 0.001	0.004 0.687	0.004 0.969
WorkExperience	0.071*** 0.000	0.038*** 0.005	0.037*** 0.000	0.028** 0.028	0.034*** 0.000	0.034*** 0.001
AcaExperience	-0.001 0.763	-0.001 0.914	-0.004 0.360	-0.001 0.868	0.003 0.117	0.003 0.784
Overall F-test	18.017***	4.705***	6.346***	4.019***	18.786***	3.300**
Overall p-value	0.000	0.001	0.000	0.004	0.000	0.013
R ²	0.357	0.126	0.163	0.110	0.366	0.092
Adj. R ²	0.337	0.100	0.138	0.083	0.347	0.064
Regression #	30	31	32	33	34	35
Intercept	0.659*** 0.000	0.314*** 0.004	0.652*** 0.000	0.329 0.002	0.006 0.856	-0.015 0.480
TotalMotivation	-0.033** 0.026	-0.020 0.338	-0.036** 0.028	-0.023 0.260	0.003 0.630	0.003 0.466
Male	-0.091*** 0.000	-0.120*** 0.001	-0.097*** 0.001	-0.120*** 0.001	0.005*** 0.638	0.005*** 0.964
WorkExperience	-0.002 0.617	-0.001 0.857	-0.005 0.266	-0.002 0.802	0.003 0.110	0.003 0.743
AcaExperience	0.071*** 0.000	0.038*** 0.004	0.037*** 0.000	0.029** 0.024	0.034*** 0.000	0.034*** 0.001
Overall F-test	18.803***	4.878***	7.018***	4.257***	18.867***	3.406**
Overall p-value	0.000	0.001	0.000	0.003	0.000	0.011
R ²	0.367	0.130	0.178	0.116	0.367	0.095
Adj. R ²	0.347	0.104	0.152	0.089	0.348	0.067

Note: */**/** denote significance at 10%/5%/1% levels

3.4. Discussion

In terms of the type of motivation that dominates business students, our results support the hypothesis (H1), as suggested by McEvoy (2011), that business students are more extrinsically than intrinsically motivated. The results reveal that extrinsic motivation is significantly higher at the 1%-level for the full sample and all subsamples based on the gender variable. Thereby the findings are similar to those of DeMarie and Aloise-Young (2003), who discovered that business students are to a higher degree motivated by career prospects and high salaries rather than an interest in the area of studies.

The results on the link between motivation and learning approach support earlier studies by Lucas and Meyer (2005) and Vansteenkiste et al. (2004), lending considerable support to the hypothesis that intrinsic motivation among business students is positively related to deep learning approaches (H2b). Similarly, extrinsic motivation yields considerable explanatory power and is significantly associated with surface learning approaches (confirming H2a).

Combined intrinsic and extrinsic motivation among business students was found to be positively related to deep learning approaches (suggesting acceptance of H2c), but the effect from combined intrinsic and extrinsic motivation was lower than for intrinsic motivation alone. Thereby, contrary to earlier studies (Mo, 2011; Rassuli, 2012) including research in business studies contexts (Everaert et al., 2017), no evidence is found that suggests that combinations of motivational forms support learning generally. Our findings thereby support the suggestion that high extrinsic motivation does not support intrinsic motivation, but slightly distracts students from deep learning.

The results show that deep learning approaches lead to better academic performance when measured as a percentage of high passes in general and on written exams, but not for other academic performance variables. A potential explanation could be that through other forms than written exams, these other performance variables are examination forms such as group assignments, and similar. This may potentially dilute the effects of in-depth learning approaches. Surprisingly, no relationship between surface learning approaches and academic performance could be established. Taken together, these results offer little support for the hypothesis H3b – that that surface learning is negatively related to academic performance, but at least partially supports hypothesis H3a – that deep learning is positively related to academic performance among business students, as documented by Davidson (2003).

Turning to the direct link between motivation and academic performance, the negative albeit mainly insignificant influence on academic performance from intrinsic motivation implies a rejection of hypothesis H4a – that intrinsic motivation and academic performance in higher education are positively related. Our findings thereby differ from earlier research, such Turner et al. (2009). Also, our results reveal that high general motivation (extrinsic and intrinsic combined) is significantly and negatively related to both Pass and HighPassWritten, thereby leading to a rejection of the hypothesis that a combined high intrinsic and extrinsic motivation is positively related to academic performance (H4b). Something that needs to be acknowledged, however, is the sensitivity related to questions on motivation. It might be that students answer more in line with how they would like to identify themselves and their goals, rather than what motivates them. This could potentially mean that students downplay their level of extrinsic motivation.

Our findings on the relationship between learning approaches and academic performance paint a somewhat mixed picture, which itself is not uncommon (Byrne et al., 2002). Our results thereby share characteristics of the large amount of research that fails to establish clear links between intrinsic motivation, learning approaches and academic performance (c.f. Biggs et al., 2001). One explanation could be that the operationalisation of the performance variables is too crude to capture any distinct effects from different learning approaches. Another potential and more dismal, the explanation could be that students are assessed and graded in ways that favour surface learning approaches.

Regarding student characteristics, several conclusions can also be drawn from the variables included in our paper. Beginning with experience, the positive relation between academic experience and all measures of academic performance suggest that students become more skilled in the task of accumulating academic credits. It also suggests that there is no pattern of weak students continuing falling behind, which also could be attributable to weak students dropping out. In combination with the negative relation between academic experience and deep learning approaches, our results could suggest that students learn over time that more surface-type learning approaches are better suited to pass exams, courses or course modules.

The lack of relationship between work experience and performance counters some prior research that documents that younger students are performing better than their older co-students (Dockweiler & Willis, 1984; M. Y. Koh & H. C. Koh, 1999). Our findings thus counter both Biggs's (1987) suggestion that work experience leads to cognitive developments and skills in handling complex tasks, as well as similar suggestions from prior research in business studies context (Duff, 1999, 2004; Sadler-Smith, 1996). Potential explanations of our findings could be that work experiences before academic studies tend to be menial jobs that add a few skills that are useful in academic studies. Alternatively, students with work experience often are older and may have additional obligations outside academic studies (such as children), which may restrict time available for deep learning approaches.

The variable on gender paints a coherent picture. Female students are more motivated across almost all motivational variables. These results contradict those of Severiens and ten Dam (1994), that suggest that male students have higher extrinsic motivation than their female co-students. Also, female students were found to adopt deep learning approaches to a greater extent and surface approaches to a lower extent. Besides, male students performed statistically significantly worse for most academic performance variables apart from PassOther and HighPassOther. The latter could relate to courses or course modules without written exams, often including group assignments, which may dilute the gender effect. Our results thus lend support to both general findings that female students tend to perform better in general (Gledhill & Van der Merwe, 1989), and-in business studies contexts (Lange & Mavondo, 2004). However, these results contrast findings on accounting students, where males have been found to attain better academic results (Hasall & Joyce, 1997; Sadler-Smith, 1996).

Conclusions

The findings presented in this paper are confirming many notions found in prior research, but also offer new insights. One is formal evidence that business students are more extrinsically than intrinsically motivated. Another is that deep learning approaches lead to higher grades for particular examination forms but not for others. On a meta-level, this corresponds to findings in prior research, which have yielded mixed results. A dismal explanation could be that deep learning approaches only are rewarded in particular examination forms (such as written exams but not on other examination forms). A more positive perspective would suggest that other examination forms than written exams often are group assignments, which may dilute the effects of deep learning approaches.

This could also indicate that the relationships between motivation, learning and performance are influenced by other factors, implying that context, student characteristics or personality matter. In this paper, a few such factors are accounted for by including variables on student characteristics. Variables relating to gender and experience provide essential information on the relationship between motivation, learning and academic performance. The findings that female students are typically more intrinsically motivated, engage more in deep learning approaches and perform better than their male counterparts are somewhat contradictory to much research in business contexts. Experience is also taken into account, and the findings indicate that academic experience increases academic performance, but no effects can be related to work experience. This suggests that generic skills learnt outside academia are less useful to attain academic credits or high grades, but that students indeed learn to master those “specialised” skills of academic studying through attending higher education. Another explanation could be that high age (being strongly correlated with work experience) often implies other obligations, such as having children or older parents that require support, allowing these students less time to spend but that they might still study more efficiently and/or energetically.

The findings also yield a number of practical implications. One is that practitioners in higher education have good reasons to stimulate motivation generally, and intrinsic motivation in particular. However, this must be accompanied by examination forms that promote deep learning, such as choosing written exams over multiple-choice exams and consider ways to assess group assignments that do all students justice.

This paper also points to fruitful areas of future research. The results indicate that the framing of academic performance, and how this is operationalised, could shed additional light. One option, albeit time-consuming and technically challenging in most administrative systems in academia, would be to operationalise performance as actual scores on exams or similar. Other areas for future research include a more granular approach to the dimensions covered by this paper’s variables on student characteristics. For instance, work experience could be differentiated by types of jobs (whether these are menial or more advanced, or related to the particular topic studied) and the length of job spells (to differentiate between more permanent positions and seasonal jobs). Finally, since this study only covers one cohort in one university college, there is a risk that the population might not be as representative as suggested. However, since prior research on this topic mainly focuses on university students and in the US, this setting offers a complement and might help to paint a broader picture. To include students in geographically diverse contexts and from different years would strengthen the analysis. Also, conducting cross-sectional studies across topics or disciplines could reveal interesting patterns in how the link between motivation, learning and performance varies and is affected by students’ experiences, nature of academic institution (college or university) or program (more academic or more vocational).

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