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RESEARCH

Bridging the gap: how business education shapes employability in architecture engineering students in Jordan

Andrew Paul Clarke[1] · Deyala Altarawneh[2] · Paulina Anna MacKrell[1] · Ahmad Abu-Arja[1]

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Abstract
This study explores the impact of business skills education on architecture engineering students at a Jordanian university, with a focus on how such education shapes students' understanding of human capital, value creation, and employability. Grounded in human capital theory, this study investigates how entrepreneurial competencies contribute to students' perceived value in the labour market. Using a case study design, we compare students who participated in the Marsam 006 business programme with those who did not. Survey data were collected to assess whether exposure to business-focussed learning enhanced entrepreneurial competencies, including self-awareness, problem-solving, and strategic thinking.

Keywords Enterprise education · Employability · Human capital · Entrepreneurial competencies

Findings indicate that students who engaged with the business education programme reported improved self-perception, confidence, and strategic thinking. While the programme strengthened core entrepreneurial skills, the results also suggest that

✉ Andrew Paul Clarke
AClarke21@uclan.ac.uk

Deyala Altarawneh
D.Altarawneh@ju.edu.jo

Paulina Anna MacKrell
PAMacKrell@uclan.ac.uk

Ahmad Abu-Arja
AAbu-Arja@uclan.ac.uk

[1] University of Central Lancashire, Preston, United Kingdom

[2] University of Jordan, Amman, Jordan

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sustained development of entrepreneurial capacity may require more experiential, practice-based learning opportunities.

The study is context-specific, focussing on one institution and a single academic discipline, which may limit the generalisability of the findings. Nonetheless, the research contributes valuable insights into the integration of enterprise education within non-business degree programmes. It highlights the potential for business education to enhance employability and professional readiness in disciplines not traditionally associated with entrepreneurship.

This study adds to the growing literature on interdisciplinary skills development in higher education and emphasises the importance of aligning enterprise education with the real-world contexts and identities of learners. It offers a model for how entrepreneurial competencies can be cultivated beyond business schools, with implications for curriculum design, teaching practice, and future research across diverse educational and cultural settings.

Introduction to the case study approach

This case study provides a human-centred approach to understanding how architecture students in a Jordanian university perceive and apply business skills education. By examining the social, cultural, and behavioural aspects of learning, this study helps to uncover how students internalise entrepreneurial knowledge and how this shapes their professional identities, decision-making processes, and career trajectories. To that end, this case study has the Research Question: to what extent does business skills education influence the development of an understanding of human capital and employability among architecture engineering students in Jordan?

Through the qualitative methods used in this study, such as surveys and participant reflections, we explore the ways in which business education influences students' awareness of their own human capital and their ability to navigate entrepreneurial opportunities.

By applying this perspective, the study not only assesses the effectiveness of business education but also provides insights into how students engage with concepts of accumulated skills and experiences within the architecture engineering sector. This approach ensures a more holistic evaluation of the impact of business skills programmes, considering both tangible competency development and the underlying social and psychological transformations that shape students' professional outlooks.

The theoretical position using human capital theory

Human capital theory is based on the idea that people are like resources; they have knowledge, skills, and experiences that can create value for themselves and for the organisations they work for. The theory suggests that investing in education and training increases a person's human capital, which then improves their productivity and employability. Just like companies invest in machines or technology; society and individuals can invest in people through education (Aman-Ullah et al., 2022).

In the context of architecture students in Jordan, human capital theory helps in understanding the value of business education. Even though these students are not studying business as their main subject, learning about things like professional practice, engineering contracts and project management gives them extra skills that employers value. These skills can improve their chances of getting a job or succeeding in their own business one day. In this way, business education builds both general and specific human capital.

The way students *perceive* their own human capital, or how they understand and value the skills they have, can also affect their confidence and career decisions. If students become more aware of their abilities through business training, they may feel more prepared to enter the job market and feel they offer their future employer more value. This links closely to the idea of employability readiness. Human capital theory supports the argument that learning business skills increases students' employability by making their human capital more visible and valuable.

Conceptual framework

A conceptual framework serves as a structured representation of relationships between key concepts, providing a theoretical foundation for research analysis. In business anthropology studies, it helps to contextualise human behaviour, decision-making, and social dynamics within entrepreneurial and educational environments. By mapping interactions between business education and students' perceptions of their skills, a conceptual framework enables a deeper understanding of how knowledge acquisition influences professional identity, self-efficacy, and value creation. This approach aligns with business anthropology's focus on studying human experiences in professional and organisational contexts, offering insights into how educational interventions shape career development and market engagement.

This case study offers a conceptual framework which describes the influencing factors which support business education to help architecture students become more employable by developing their skills, increasing their confidence, and improving how they see their own value. This is used to create a visual representation of the research question and the influencing factors which relate to that research question. The framework is introduced early in the paper in its simplest form and is developed through the paper as the literature review and case study data refine the framework.

At the heart of the model is the idea that business education, in this case study the Marsam 006 programme, helps students develop a range of entrepreneurial competencies. These include problem-solving, creative thinking, leadership, and risk-taking; skills that are useful not just for starting a business, but also for working successfully in professional environments (Lumpkin & Dess, 1996; Motta & Galina, 2023; QAA, 2018). For architecture students in particular, these skills support a shift from being a designer to becoming a commercially aware practitioner.

Once students gain these competencies, they begin to understand their human capital more clearly. Human capital refers to a person's knowledge, skills, and experience, all the things that make them valuable to an employer (Kwon, 2009). In this case study, we evaluate if students are not just learning new skills, but they are also

learning how to recognise the importance of those skills. This growing awareness is especially important in fields like architecture, where employability depends on a mix of technical and business know-how.

As students better understand their human capital, they feel more prepared to enter the job market. This includes not only having the right abilities, but also feeling confident, adaptable, and able to explain what they bring to a future employer (Clarke et al., 2020).

A conceptual framework is offered which notes a cause-and-effect relationship between known elements of business skills courses and the understanding of the value of those skills. Here, two fundamental variables are identified: the independent variable being the business skills education, and the dependent variable being the understanding of the value of that education. Figure 1 presents a basic starting point that shows the assumed relationship exists between business skills education and the students' understanding of business skills.

Thus, the following relationship diagram is offered:

Figure 1 shows that there is *some* relationship between business skills education, and the understanding of that education by the students, but at this stage in the case study the level of relationship is not known. The addition of influence from the literature will allow us to further refine this model.

Background: Jordan context

The architectural services sector in Jordan ranges from small offices led by a principal architect to large-scale firms where the architecture department is part of a broader engineering structure. These firms handle a wide range of projects, including interior design, landscape design, residential villas, commercial and mixed-use buildings, complexes, and, in some cases, urban solutions. This scope extends beyond Jordan to neighbouring Gulf countries.

The services offered by these firms vary depending on the project type, but typically include one or more packages such as design, construction, and supervision. These packages may involve conceptual ideation, architectural drawing development, shop drawing production, permit acquisition, and site visits. Firms coordinate closely with various entities, including the Ministry of Public Works and Housing (MoPWH), the relevant municipality, the Jordan Engineers Association (JEA), the Civil Defence, and the Companies and Engineering Offices Authority (CEOA), among others, depending on the nature of the project.

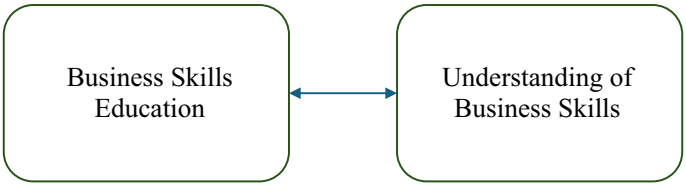

Fig. 1 Conceptual framework showing the relationship between business skills education and understanding of business skills

The types of projects that architectural service firms can apply for are influenced by several factors, including their specialisation and classification, as outlined in the 2020 guidelines for classifying technical service providers (Jordanian Law, 2020).

Architecture education in Jordan is typically offered through either Engineering Schools or Arts and Design Schools. However, twenty universities across the country follow a study plan similar to that of the University of Jordan, the country's official public university. Most universities are accredited by the National Committee for Accreditation, which operates under the Ministry of Higher Education, and offer both Bachelor's and Master's programmes.

This paper will focus on the Bachelor's level study plan, as Master's programmes are not widely available, vary significantly between universities, and are typically either thesis-based or coursework-based. Additionally, nearly all architecture departments across Jordan are currently pursuing accreditation from the National Architectural Accreditation Board (NAAB), leading to the emergence of revised curricula with a stronger emphasis on technology.

At the University of Jordan, the Architecture Bachelor's programme includes several courses related to entrepreneurial skills, such as professional practice, project management, specifications and quantities, building workshops, conservation of historic environments, and environmental control. Table 1 below provides descriptions of these courses as listed on the official University of Jordan website:

Current study plans still lack courses explicitly dedicated to entrepreneurial skills, such as business management for architects, which could cover business strategies, marketing, and entrepreneurship tailored to the architectural profession; real estate development, which could focus on real estate markets, development processes, and investment analysis; and finance and accounting, which could provide a deeper understanding of financial statements, investment analysis, and accounting principles.

However, students do have some flexibility to develop these skills. Many universities offer elective credit hours at the university level, allowing students to choose business-oriented courses. Additionally, real estate development concepts are often incorporated into urban planning courses already included in the study plan. At the University of Jordan, a faculty-level course, engineering economy (0901420)—an obligatory requirement provided by the Civil Engineering Department—also offers financial and economic insights relevant to architects.

Marsam 006 programme

The Marsam 006 programme is an initiative by the Jordan Engineers Association (JEA) designed to enhance the skills and professional competencies of engineers in Jordan. As part of JEA's broader mission to advance the engineering profession, this programme provides training aligned with both local and international standards. Its primary objective is to bridge the gap between academic knowledge and practical application, ensuring that engineers are well-equipped for industry challenges. Through continuous professional development, JEA's training programmes,

Table 1 Descriptions of these courses as listed on the official University of Jordan website

Course title and ID number	Course description
Professional practice (0902485):	This course covers various aspects of architectural practice, including professional, legal, and administrative issues related to architecture. Understanding the legal and administrative framework is crucial for managing projects, negotiating contracts, and running an architectural business
Project management (0932487)	This module introduces principles of project management, emphasising planning, scheduling, cost control, quality assurance, safety, feasibility studies, and finance. These skills are directly relevant to entrepreneurial skills as they help students manage resources, timelines, and budgets effectively
Specifications and quantities (4840090)	Detailed descriptions of architectural works and specifications, along with preparing bills of quantities, are covered in this course. Mastery of these skills ensures accurate cost estimation and budgeting, which are essential for financial management in commercial projects
Building workshop (0902137)	This practical course involves analysing local construction technology and implementation techniques, preparing technical reports, and applying small-scale projects. The hands-on experience in managing construction processes and understanding technological applications can enhance students' entrepreneurial skills
Conservation of historic environment (0902459)	While primarily focussed on conservation, this course includes documentation, field surveys, and listing of heritage buildings, which can be valuable for understanding the economic aspects of conservation projects and the potential for heritage tourism
Environmental control (0902459):	This course covers renewable energy and sustainable design principles. Knowledge of sustainable practices and their implementation can be a significant commercial advantage in the growing green building market

including Marsam 006, aim to address the evolving needs of the engineering sector in Jordan and the Arab region (JEA, 2024).

Marsam 006 is an intensive three-month training programme exclusively for fresh graduate architects. While it covers a wide range of topics through lectures, interactive exercises, guest speakers, and site visits, certain modules specifically enhance entrepreneurial skills. These include:

- Construction Management
- Specifications and Bill of Quantities (BOQ)
- Engineering Contracts
- Claims and Dispute Resolution

- Sustainable Design and Green Building
- Value Engineering

Table 2 below provides descriptions of these modules as listed on the official JEA website (Jordanian Law, 2020):

The Marsam 006 training programme by the Jordan Engineers Association is a well-rounded initiative aimed at enhancing the professional capabilities of engineers. By focussing on critical areas such as construction management, contracts, and financial planning, the programme equips engineers with the necessary commercial skills to succeed in their careers. However, there is always room for improvement, and future iterations of the programme could benefit from a more explicit emphasis on modules directly addressing financial management, entrepreneurship, and business development to further enhance entrepreneurial skills among engineers.

Core concepts of the study

For this study, *human capital* is described as the sum of an individual's accumulated knowledge, skills, experience, and attributes that contribute to their perceived and actual value in the labour market and within organisational contexts (Clarke, 2024; Kwon, 2009). It includes both general human capital (transferable knowledge and soft skills) and specific human capital (task-specific and discipline-oriented

Table 2 Descriptions of modules as listed on the official JEA website

Course name	Course description
Construction management	This module focuses on the management aspects of construction projects, including planning, scheduling, and resource allocation. Understanding these elements is crucial for managing project costs and ensuring profitability
Specifications and bill of quantities (BOQ)	Engineers learn to prepare and interpret specifications and BOQs, which are fundamental for cost estimation and financial management in construction projects
Engineering contracts	This module covers the legal and financial aspects of engineering contracts, including contract negotiation, risk management, and dispute resolution. Knowledge in this area is vital for protecting financial interests and ensuring project viability
Claims and dispute resolution	This course teaches engineers how to manage claims and resolve disputes effectively. Understanding these processes is crucial for maintaining financial control and minimising losses in projects
Sustainable design and green building	This module addresses the financial benefits of sustainable practices, such as energy efficiency and reduced operational costs, highlighting the economic advantages of sustainable design
Value engineering	Focuses on optimising project functions and costs, ensuring that engineers can deliver maximum value for the lowest possible cost

expertise). In the case of architecture engineering students, human capital includes not only technical knowledge (design, construction for example) but also broader competencies such as communication, initiative, problem-solving, and emotional stability as outlined in UK's National Careers Service (2024).

Entrepreneurial competencies are described as a cluster of behavioural, cognitive, and emotional capabilities that support opportunity recognition, value creation, and adaptive problem-solving, whether or not these lead to venture creation. This study refers to Motta and Galina (2023) who detail entrepreneurial competencies as: *teamwork and collaboration; creativity; risk-taking; self-efficacy; problem-solving; planning and organisational abilities; persuasion;* and *networking*.

Literature review

Entrepreneurial education and generic landscape

The literature notes 10% of students want to start their own business, so from that 90% do not (Jones & Penaluna, 2013); if teaching entrepreneurial skills are focussed to those who want to start a business, then the 90% who do not may misunderstand the relevance of those skills in their future work. While the number of enterprise education (EE) programmes offered to non-business students is growing, there is still a focus on business education programmes offered solely from Business Schools (Roberts et al., 2014). While an increase in creative ideas generation is noted, often students traditionally regarded as non-business students may lack the entrepreneurial skills to turn their ideas into business ventures (Jones & Jones, 2014). The standard definitions of entrepreneurial attributes were noted by Lumpkin and Dess (1996) as: to be autonomous; to innovate and take-risks; to be aggressive towards competitors; and being proactive in seeing opportunities. Five personality types have been identified by Zhoa et al. (2010) when relating personality types to entrepreneurial intent, known as the Big Five Model. These are seen as: *emotional stability*; *extraversion*; *openness to experience*; *agreeableness*; and *conscientiousness*. Motta and Galina (2023) also identify a comprehensive set of entrepreneurial competencies and skills that are developed through experiential learning. These include: *teamwork and collaboration; creativity; risk-taking; self-efficacy; problem-solving; planning and organisational abilities; persuasion;* and *networking*. In a study by Watson (2013), it was noted that a paucity of research exists on the applied nature of being entrepreneurial; this was building on work by Tan (1996 p.8), noting '*society should organise its economic activities not solely on the basis of the profit motive, but also on the value to society*'. This suggests that research has been carried out personality types and attributes, but not *value* on a human action as an intangible entity.

In 2018 the Quality Assurance Agency (QAA, 2018) defined enterprise and entrepreneurship as:

- Enterprise: the generation and application of ideas, which are set within practical situations during a project or undertaking. This is a generic concept that can be applied across all areas of education and professional life.

- Entrepreneurship: the application of enterprise behaviours, attributes, and competencies into the creation of cultural, social, or economic value. This can, but does not exclusively, lead to venture creation.

The QAA definition starts to move us away from counting value in terms of just profit and loss, and more to looking at value in terms of how people behave, the attributes they have or the skills they have. This begins to offer an intangible measure of value in terms of this is now putting a value to a human action as opposed to the profit a business might make.

By redefining the skills currently considered to be entrepreneurial and evaluating their impact on human capital, the value of those skills can be realised by those who wish to work for someone else. This begins to address the research question by showing that business skills education, when reframed through broader definitions of enterprise, can develop transferable competencies that enhance human capital and employability for architecture engineering students in Jordan, even if they do not intend to start a business. It highlights how a shift from profit-focussed entrepreneurship to behaviour and value-based enterprise supports wider relevance and application across disciplines.

Critique of gaps in architecture-specific enterprise education

Although enterprise and entrepreneurship education (EE) has grown across universities, it is still mainly delivered within business schools and often focuses on starting a business (Jones & Jones, 2014; Roberts et al., 2014). This narrow focus does not fully meet the needs of students in fields like architecture and architecture engineering. While architecture engineering students often show creativity, initiative, and problem-solving ability, skills that overlap with entrepreneurship, these qualities are rarely framed or developed through enterprise education in their courses.

There is a clear gap in how enterprise education is adapted for architecture engineering students. Most of the current literature focuses on technical or design skills, with little attention to skills like communication, commercial awareness, collaboration, or leadership: skills that are essential in real-world architecture practice (Lumpkin & Dess, 1996; Motta & Galina, 2023; NCS, 2024). As a result, many architecture students may not see the value of entrepreneurial or business skills in their career paths.

Another issue is that much of the existing enterprise education research is based on Western models. There is very little research that explores how students in other cultural contexts, such as Jordan or the wider Middle East, understand or apply entrepreneurial skills (Pfeilstetter, 2021). This limits the usefulness of existing models for students in those regions.

Finally, enterprise education in architecture often does not make use of learning theories that could make it more meaningful, such as experiential learning (Bell & Bell, 2020; Kolb, 1984; McCarthy, 2010). Yet, as this study shows, students with work experience or exposure to business contexts are more likely to value entrepreneurial skills. This highlights the need to connect enterprise education more closely

to real-world experience and professional identity development in architecture (Clarke et al., 2024).

Human actions and how these link value with human capital

In 2009, Kwon noted that human capital is noted to be viewed as knowledge in the individual or organisation. This human capital can be seen as an individual's accumulated knowledge, skills, talent, and experience, which collectively provide value to the company the person works for (Kwon, 2009).

The UK Government has a National Careers Service (NCS, 2024) website which states the skills used in certain careers. Under architect, it states the skills used are:

- Design skills and knowledge
- Knowledge of building and construction
- To be thorough and pay attention to detail
- Thinking and reasoning skills
- Customer service skills
- Excellent verbal communication skills
- Analytical thinking skills
- The ability to use your initiative
- To be able to use a computer and the main software packages confidently

The above therefore covers the traditionally recognised skills such as design and building construction. However, things like customer service and communication could come under a general theme of emotional stability. The skills noted by the NCS can easily be mapped to those noted by Lumpkin and Dess (1996) and Zhao et al., (2010) and Motta and Galina (2023), and in doing this we can see value in EE for students who want to start a business and also for students who do not want to start a business. In 2009, Kwon noted that human capital divides into general human capital (accumulated knowledge and skills) and specific human capital (contextual education and training on specific tasks). Thus, we can show how the skills and education a student receives directly contributes to their human capital (Clarke, 2024).

By having a greater understanding and appreciation of the *accumulated knowledge and skills* and the c*ontextual education and training on specific tasks* an individual has, the impact on their human capital can be recognised, thereby identifying the value that human capital has on the company they work for in terms of firm performance.

The literature shows us that adopting an approach of reflection on one's accumulated skills (Clarke et al., 2020), and an enhanced understanding of the relevance of those skills (Clarke et al., 2024), leads to a greater appreciation of the value contained within the business education the students engage with. Thus, the conceptual model can be refined to offer reflection and relevance as the moderators which determine the level with which the value in that business skills education is understood. Informed by Learning Theory (Akella, 2016; Bell & Bell, 2020; Kolb, 1984;

McCarthy, 2010) and reflective practice literature (Clarke et al., 2020 refers), Fig. 2 introduces two key moderating variables: reflection and perceived relevance.

Here we expand on and reference the research question by demonstrating how business skills education contributes to both general and specific human capital development, aligning with the skills required in architecture engineer careers. By mapping entrepreneurial competencies to sector-relevant skills and emphasising reflection and relevance, we show how such education enhances employability and deepens students' understanding of their value within the workplace.

Methodology

This study adopts an exploratory mixed methods design using a single survey that combines quantitative Likert-scale items with qualitative open-text questions. This approach allows for the collection of both numerical data on students' perceptions and more detailed reflections on how they interpret and apply business skills in their educational and professional contexts. While modest in scale, this mixed methods approach supports a richer and more nuanced understanding of the topic.

This study uses a constructivist ontology, which assumes that knowledge and reality are socially constructed rather than objectively determined. The research explores how architecture students in Jordan perceive the value of business skills education, particularly the intangible skills acquired through their studies. Since the study focuses on subjective experiences and interpretations, it aligns with an interpretivist epistemology, emphasising meaning-making rather than purely objective measurement.

The research follows an abductive approach, which allows for an iterative process of exploring patterns in the data while engaging with theoretical concepts. Rather than strictly testing an existing theory (deductive) or developing one purely from observations (inductive), the abductive approach enables a back-and-forth

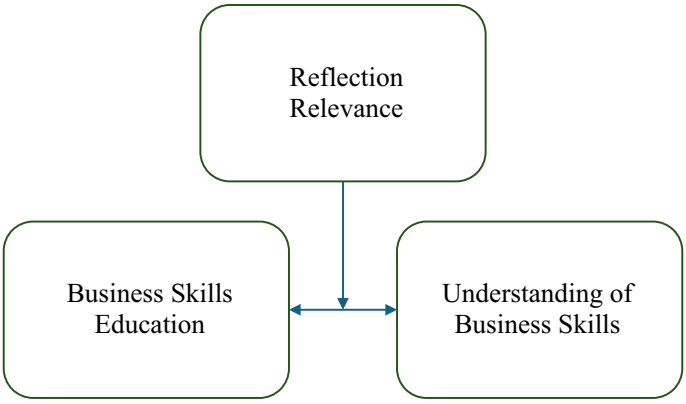

Fig. 2 Refined conceptual model introducing the moderating variables of reflection and perceived relevance

movement between empirical findings and theoretical insights, refining understanding as new patterns emerge.

Ethical approval statement

The BAHSS Ethics Review Panel at the University of Central Lancashire approved our research proposal (approval: BAHSS2 01027) on May 26th 2023. Respondents gave written consent for review and signature before undertaking the surveys.

Data collection and sampling

A survey-based method was employed to evaluate students' perceptions of the value of business education. Purposive sampling was used to ensure the inclusion of both postgraduate architecture engineering students studying in Jordan. A comparison control group was established to compare students who participated in the Marsam 006 business programme with those who did not. In total, 47 surveys were distributed, with 46 responses received (response rate: 98%). Among the respondents, $n = 20$ students had undertaken the Marsam 006 programme, while $n = 26$ had not.

Scope and focus

This case study specifically evaluates the perceived value of intangible skills such as leadership, commercial awareness, and problem-solving rather than the tangible, technical skills learned during architectural education. By focussing on perceptions, the study provides insights into how students interpret and apply business education in their professional development.

Quantitative analysis

Survey data were analysed using descriptive statistics in Microsoft Excel. Frequencies and percentages were used to summarise responses to closed Likert-scale items across both groups (students who completed the Marsam 006 programme and those who did not). Comparisons between these groups were made manually by identifying response patterns, mean values, and notable differences in frequency distributions.

Although no inferential statistical tests (ANOVA or t-tests for example) were conducted, the analysis focussed on identifying meaningful trends in how different groups perceived the value of business skills. This approach was chosen to align with the study's exploratory and interpretive orientation, where the primary aim was to understand perceptions, not to test hypotheses.

The study does not claim statistical generalisability, and readers are cautioned to interpret group differences as indicative rather than statistically conclusive. The findings are intended to inform conceptual development and practical understanding rather than establish causal relationships.

Qualitative analysis

Open-ended survey responses were subjected to manual thematic analysis. Recurring themes were identified through close reading, coding, and categorising of student reflections. This process was informed by Braun and Clarke's (2006) six-phase framework and guided by concepts from entrepreneurial competency theory and human capital theory.

Limitations of analytical approach

The absence of inferential statistics means that reported group differences are not tested for statistical significance. Also, the small sample size and case study nature of the research limit the generalisation of findings. Despite these limitations, the combination of descriptive data and thematic insights provides a rich, context-sensitive account of how architecture engineering students perceive the value of business education in their professional development. Future studies may benefit from applying inferential statistical techniques to test the significance of observed patterns and strengthen the generalisability of findings.

Results

This survey provides insights into the educational and work experiences, qualifications, and perspectives of the respondents, with a particular focus on the concept of *entrepreneurial skills* and how they might affect employability.

Demographics

Nationality and Background: Most respondents are Jordanian (39), with some having Palestinian (2), Iraqi (3), and Syrian (1) roots. This indicates a predominantly Jordanian student sample. The survey includes 40 undergraduate (UG) students, 5 postgraduate (PG) students, and 1 doctorate student, showing a skew towards UG respondents.

Education

The majority of students completed their degrees in Jordan (42), and most of them studied in Arabic, though 5 studied in English. The PG respondents are all from Jordan (4) or Iraq (1), and the doctorate student is Jordanian. Among those who completed their degree in English, it appears that English-language education is concentrated among those with higher qualifications (PG and doctorate students).

Business qualification and work experience

Business Qualifications: 28 respondents, primarily UG students, do not hold a business qualification. The rest have either certificates or some other form of business-related training, but very few have a formal business qualification.

Work Experience: A clear pattern emerges where students who have studied in English or have higher education levels (PG and doctorate) tend to have more work experience than UG students. However, many still have limited professional experience (less than 3 years).

Entrepreneurial skills

Definition and Importance: Entrepreneurial skills are described variably by respondents. Some see it as understanding business operations, while others emphasise soft skills or market awareness. Those with more work experience tend to place more value on entrepreneurial skills in job interviews.

Training: The majority of respondents believe that entrepreneurial skills training would help improve their employability. This is especially true for those who have taken the Marsam 006 course. Respondents who did not take the course tend to have more reservations about its impact.

Career Goals: There is a split in career aspirations: some want to work in industry, while others prefer academia or government roles. Entrepreneurial skills training is viewed as more essential for those aiming to work in industry.

Employer expectations

What Employers Look for: both groups (those who took the Marsam 006 course and those who did not) agree that subject knowledge is the most important factor employers look for (ranging from 75 to 89% of respondents). However, business skills, IT skills, and soft skills are also considered important, especially for those with less work experience.

Work Experience Impact: respondents with more work experience tend to place more importance on business and leadership skills. Those with less than 2 years of work experience are more focussed on subject knowledge, IT, and soft skills.

Training and development needs

There is a general consensus that entrepreneurial skills training can improve employability, with the exception of a few who want to pursue academia (where business acumen is less emphasised). Interestingly, while the majority think entrepreneurial skills is valuable for job interviews, the actual impact on their career goals or perceived work-readiness may vary, especially for those with less experience.

There is a strong belief that entrepreneurial skills can aid in employability, particularly for those aiming for industry roles. Respondents with more formal

education and training in English tend to value entrepreneurial skills more and feel it will help them in job interviews. However, there is some disparity based on work experience and career aspirations, with those in academia or with less experience not seeing as much immediate value in entrepreneurial skills.

Interpretation of the results

Business anthropology explores how cultural, social, and behavioural factors influence business practices, and organisational dynamics (Jordan, 2010, 2019; Moore, 2011; Pfeilstetter, 2021; Sherry, 1988; Tett, 2014, 2021 refer). By analysing these survey results through the lens of business anthropology, we can gain a better understanding of how cultural and educational backgrounds, as well as training and work experience, shape the way students perceive and approach entrepreneurial skills and employability.

In relation to entrepreneurial competencies

The results of the survey can be interpreted through the lens of entrepreneurial competencies, especially in terms of the entrepreneurial competencies noted: *teamwork and collaboration, creativity, risk-taking, self-efficacy, problem-solving, planning and organisational abilities, persuasion,* and *networking:*

The results of the survey can be extrapolated to cluster the entrepreneurial competencies into themes. By analysing the responses in the context of the students' business skills education, work experience, and their understanding of entrepreneurial skills, we can group these competencies into meaningful themes that reflect the ways in which the respondents view and apply entrepreneurial skills.

Problem-solving.

and *creativity* can be grouped together as competencies related to innovation and adaptability. These themes highlight the ability to think critically, approach challenges with novel solutions, and adapt to changing business environments. Students who completed the Marsam 006 course show a greater understanding of the role of creativity and problem-solving in business. For instance, the postgraduate students who have work experience emphasised that business skills like problem-solving are crucial, aligning with the idea that these competencies are necessary for handling business challenges.

Risk-taking and *self-efficacy* are related to confidence and the ability to make decisions in uncertain environments. These competencies reflect a person's willingness to take calculated risks and believe in their ability to succeed in challenging situations. Students with work experience, especially those with PG qualifications and those who took the Marsam 006 course, tend to have a more developed sense of self-efficacy and recognise the importance of taking risks in business. They indicate that entrepreneurial skills involve not just understanding business operations but also making confident, risk-informed decisions.

Teamwork and *collaboration* reflect interpersonal skills and the ability to work effectively with others in a business environment. These competencies underscore the importance of relationships, mutual respect, and collective problem-solving. Although not explicitly stated in responses, the underlying importance of teamwork and collaboration can be inferred from the students' responses about the importance of subject knowledge and entrepreneurial skills. In particular, those working in government and academia are likely to emphasise collaboration and interpersonal skills, as these environments often require team-oriented work.

Planning and *organisational abilities* are about the capacity to strategically plan and organise resources to achieve business objectives. This is linked to strategic thinking, time management, and execution of complex tasks. Students with more business training and work experience likely recognise the value of strong planning and organisational abilities. For example, students who feel that entrepreneurial skills training is crucial for their employability tend to connect these skills to the ability to plan and organise work efficiently.

Persuasion and *networking* are both related to communication skills and the ability to build relationships that can drive business success. These competencies emphasise the importance of influencing others and leveraging professional networks. Although persuasion and networking were not frequently highlighted in the survey responses, there are hints that students who have taken the Marsam 006 course or who are working in industries that require public or organisational engagement may see networking as an important skill for business success. For example, those wanting to work in industry or government may value persuasion and networking for negotiating deals, building partnerships, and advancing in their careers.

These themes are directly related to an enhanced understanding of one's human capital, as they all point to key competencies that contribute to the value of an individual in the labour market. Human capital refers to the knowledge, skills, experience, and attributes that make someone valuable in a business or professional context. By recognising and developing these entrepreneurial competencies, individuals can better understand and leverage their own human capital to improve their employability and career prospects. Here we evidence how business skills education fosters entrepreneurial competencies that directly enhance students' understanding of their own human capital and employability. By clustering these competencies into themes such as innovation, confidence, collaboration, planning, and communication, we demonstrate how architecture engineering students in Jordan come to recognise the broader relevance of entrepreneurial skills to their professional development.

Discussion of survey results

From a business anthropology perspective, the survey results provide an insightful look into how cultural, social, and educational contexts shape the development of competencies relevant to the business world. Business anthropology focuses on understanding the ways in which individuals from different cultural settings approach business practices, professional development, and organisational behaviour. The data presented here highlight several important aspects that reflect the

influence of local culture on students' perceptions of entrepreneurial skills and business skills and how these perceptions relate to broader global business norms.

The findings of this study highlight the complex ways in which architecture students respond to business education and how these responses shape their sense of employability. While the conceptual framework outlines a clear progression from business education to entrepreneurial competencies, to human capital perception and employability readiness, students' reflections suggest that this process is not linear or uniform. Instead, it is influenced by a range of personal, cultural, and contextual factors.

Cultural context and educational influence

The survey suggests that postgraduate students tend to value business-related competencies, like entrepreneurial skills and business skills, more than undergraduate students. This aligns with a growing trend in higher education in the Levantine region where more advanced educational programmes incorporate global business practices, thereby introducing students to a more internationalised view of what constitutes professional success. These reflections concur with human capital theory, which suggests that education increases individuals' capacity and perceived value in the labour market (Aman-Ullah et al., 2022). Here, students recognised business knowledge as part of their own human capital, not just as technical information, but as something that increased their sense of agency and professionalism.

Social Structures and professional identity formation

The survey data reveal differences between students who have work experience and those who do not. Students with more work experience, particularly those in the *yes* group who completed the Marsam 006 course or had practical business training, place a higher value on entrepreneurial skills and business skills. This points to a key area of interest in business anthropology: how socialisation into the workforce shapes professional identity. For students who have worked or been exposed to business environments, their understanding of which skills are necessary for career advancement shifts from technical knowledge to more holistic competencies like problem-solving, networking, and strategic thinking.

On the other hand, students without work experience still tend to emphasise subject knowledge as the primary criterion for career success, which could indicate that they are in the early stages of socialising into professional business environments. This is as an illustration of how the workplace acts as a socialising force, providing students with opportunities to learn competencies that extend beyond the classroom and into real-world settings. These experiences contribute to the development of more complex professional identities that integrate both local and global business norms, aligning to experiential learning theory (Akella, 2016; Bell & Bell, 2020; Kolb, 1984; McCarthy, 2010).

Networking and social capital

The survey reveals that many students are aware of the value of entrepreneurial skills in improving employability, yet there is no explicit mention of networking as a critical skill. This suggests a potential cultural gap in how students view the role of social capital in career success. In Middle Eastern cultures, particularly in Jordan, networking and relationship-building may not be as prominently valued or emphasised in educational settings, compared to Western business environments where networking is often considered essential for professional success.

Entrepreneurial skills and business norms

One of the key findings is that students who participated in the Marsam 006 course expressed greater awareness of the importance of business skills in job interviews, and many indicated that they felt better prepared for industry roles. This shift towards global business competencies, such as an understanding of how businesses operate and the importance of commercial awareness, highlights a hybridisation of local and global business practices. Students exposed to international business models, such as those through English-language education, are more likely to value competencies like problem-solving, risk-taking, and creativity—skills that are often more associated with entrepreneurship in Western business culture.

Work experience and socialising into entrepreneurial competencies

The survey reveals that students who have taken business training or completed the Marsam 006 course tend to recognise the importance of entrepreneurial skills and consider it crucial for job interviews. This resonates with a perspective on how work experience and training programmes serve as mechanisms for socialising individuals into the competencies needed to succeed in the globalised business world. For students, particularly those with a more entrepreneurial orientation, competencies like risk-taking, planning, and creativity are key to navigating the complex, competitive job market. However, the survey results also suggest that many students, especially those with less work experience, still focus primarily on technical subject knowledge and may not yet fully appreciate the significance of more dynamic entrepreneurial skills like networking and risk-taking. This aligns with the literature which notes the importance of a real-world understanding in terms of the application of skills (Cope & Watts, 2000; Kolb, 1984; Kolb et al., 2001; McCarthy, 2010 refers). This gap highlights an area which could provide valuable insights into the cultural transmission of entrepreneurial values and how different cultures socialise their future business leaders into these competencies.

Work ready competencies

The literature notes the skills required for an architect are (NCS, 2024):

- Design skills and knowledge
- Knowledge of building and construction
- To be thorough and pay attention to detail
- Thinking and reasoning skills
- Customer service skills
- Excellent verbal communication skills
- Analytical thinking skills
- The ability to use your initiative
- To be able to use a computer and the main software packages confidently

The above is a combination of tangible, quantitative skills and intangible, qualitative skills. This case study evaluates the intangible. The elements noted above in Marsam 006 are in the main quantitative in that they are university courses which are measured using numerical metrics in terms of passing or failing. When looking at the skills required by the National Careers Service, we are seeing some which are now intangible, so therefore cannot be measured in quantitative ways with any ease. These are more qualitative, and are a sum of the accumulated skills one might experience. The literature has led us to see moderator variables of reflection and relevance (Clarke et al., 2024 refers), where an enhanced understanding of the value of these accumulated skills and experience is noted to support firm performance (Aman-Ullah et al., 2022; Bontis & Serenko, 2007; Choi & Chang, 2020 refers). The results of this case study offer one more moderator variable, notably work experience. The addition of this third element can then be grouped into *personal and professional growth*; indeed, the combination of both tangible and intangible elements is recognised in the literature, noting by having a greater understanding and appreciation of the *accumulated knowledge and skills* and the c*ontextual education and training on specific tasks* an individual has, that individual can realise greater value for the company they work for (Clarke, 2024; Kobylińska, 2022).

By demonstrating how business skills education, here interpreted through a business anthropology lens, we illustrate architecture engineering students' understanding of human capital and employability in culturally specific and globally relevant ways. We show that competencies such as creativity, problem-solving, and communication, alongside experiential learning and work experience, enable students to perceive both tangible and intangible aspects of their value, thus enhancing their readiness for the labour market.

Summary

Cultural context and stage of education shape how business skills are valued

Postgraduate students were more likely to see entrepreneurial and business skills as important to employability than undergraduates. This reflects increasing exposure to global business norms in higher education and supports human capital theory by showing how education enhances perceived professional value. These perceptions are also shaped by students' cultural context and their evolving understanding of what counts as professional success in architecture.

Work experience plays a key role in professional identity and skill relevance

Students who completed Marsam 006 or had real-world experience placed greater value on entrepreneurial competencies like planning, risk-taking, and problem-solving. These students had begun to internalise global business norms through practice, confirming experiential learning theory. For them, the workplace acted as a socialising environment that helped shift their focus from purely technical knowledge to broader, more dynamic skills.

Professional identity is culturally constructed and socially negotiated

Students without business exposure often prioritised subject expertise over business acumen, revealing a gap in how entrepreneurial competencies are valued. Business anthropology helps explain this: professional identity formation is not just shaped by education but also by cultural values. Students interpret business education through personal, social, and institutional lenses that influence whether they adopt or resist enterprise thinking.

Reflection, relevance, and work experience moderate the development of employability

Students' understanding of intangible, qualitative skills, such as initiative, analytical thinking, and communication, depends on how relevant business education feels to their goals, whether they can reflect on its purpose, and whether they have seen it in action. These three moderating variables influence how students perceive and develop their human capital, suggesting that business education is most effective when it is contextually grounded, reflective, and practice-based.

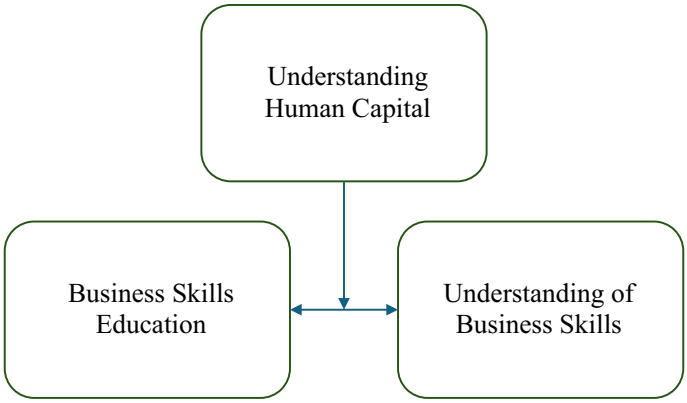

Fig. 3 Understanding the influence of human capital

Incorporated framework

That personal and professional growth in itself has tacit and explicit elements: unconscious intuitive knowledge gained through experience sitting alongside formal structured learning for instance. The accumulated knowledge, skills, and experience thereby sit alongside and next to the formal learning, with a moderating value of its own. While Fig. 2 refines the initial model by incorporating experiential factors such as reflection and perceived relevance, it does not yet capture the broader outcomes in terms of employability. Figure 3 extends this framework by integrating human capital theory, providing a final conceptual foundation that links business education to students' understanding of their own value in the labour market.

Here we can now see one moderating influence of an enhanced understanding of the value of business skills education is an enhanced understanding of one's human capital. Figure 3 incorporates human capital theory (Aman-Ullah et al., 2022), showing how business education may influence employability with the students' understanding of the value in human capital moderating that influence.

While the conceptual framework helps explain the structural relationships between business skills and employability outcomes and the moderators within that relationship, to understand how students *experience* and *make sense of* these changes is interesting from the business anthropology lens. Architecture engineering students will in the main approach enterprise education through the values and assumptions embedded in their disciplinary training and wider societal expectations. For many students, business education challenges established ideas about what it means to be a professional, a designer, or an entrepreneur for example. For many, business education was not just a set of new tools, but a challenge to existing identities rooted in creativity, aesthetics, and social meaning. Their reflections suggest that the value of human capital is socially constructed, built not just on what they learn, but on how they see themselves and how they believe they are seen by others in the profession. Through this lens, human capital becomes a culturally negotiated resource, not just an economic one.

Work experience and the perceived relevance of business education also play a key role in how students make sense of their learning; and these, too, are shaped by cultural context. Students who responded to having prior work experience were more likely to see business skills as useful and necessary. Having seen these skills in action, they were better able to connect classroom learning to the realities of architectural practice. For students without this experience, the value of business education was less clear, especially when it seemed to conflict with their view of architecture as a creative or technical discipline. In this way, relevance is not just about how content is taught; it is also about how students relate it to their identity, their future role, and what they believe success looks like in their field. From a business anthropology perspective, both work experience and relevance shape how students understand and value human capital, not just in practical terms, but in relation to their own stories, expectations, and the professional world they imagine themselves entering.

Contradictions in findings

While the conceptual framework proposed a relatively linear progression, from business education to entrepreneurial competencies, leading to greater awareness of human capital and enhanced employability, the findings revealed a more complex, context-dependent process. Several notable contradictions emerged that challenge the assumptions embedded in the original model.

Firstly, despite the consistent emphasis in the literature on networking as a core entrepreneurial competency, students rarely identified it as a skill of value in their survey responses. This is particularly surprising given its strong association with employability in Western business culture. The limited reference to networking may reflect a cultural disconnection; in the Jordanian context where this study is based, the value of social capital and relationship-building may be understood differently or less openly discussed in academic or formal settings. This suggests that some competencies considered universal in entrepreneurial education may not resonate equally across cultures.

Secondly, the findings showed that many undergraduate students continued to prioritise technical subject knowledge over business or entrepreneurial competencies, even after being exposed to business education. This outcome indicates that business skills education alone is not always sufficient to shift students' perceptions of what matters for employability. Without intentional opportunities for reflection and real-world application, students may struggle to recognise the value of these competencies in professional contexts. This highlights a potential gap between curriculum content and the pedagogical methods used to deliver it.

Thirdly, students who had taken the Marsam 006 course or had prior work experience expressed a clearer and more confident understanding of entrepreneurial competencies, especially in relation to employability. These students were more likely to identify problem-solving, creativity, and risk-taking as critical skills. However, this deeper understanding often appeared retrospectively, that is, after having applied their learning in a practical setting. This challenges the assumption that the impact

of business education is immediate. Instead, the findings suggest that the value of entrepreneurial skills is often realised through post-course reflection or lived experience, rather than during the academic learning process itself.

Taken together, these contradictions point to the need for a more nuanced and iterative model, one that accounts for personal, cultural, and contextual variables. While the original framework holds in principle, these findings suggest that its application is not universally consistent, and that moderating factors such as culture, experience, and reflective engagement play a critical role in shaping students' professional development and understanding of human capital.

Implications

The findings suggest that students who have completed business skills programmes (Marsam 006 for example) or gained work experience demonstrate a stronger appreciation of entrepreneurial competencies such as problem-solving, creativity, and commercial awareness. This indicates the value of embedding real-world, practice-based learning into architecture engineering curricula.

Although research in this area is still emerging, there is growing evidence that intangible elements, such as human capital, self-awareness, and reflective insight, significantly contribute to personal development and, in turn, to enhanced organisational performance. By incorporating structured reflective practice, real-world project-based learning, and an emphasis on relevance, educators can help students develop a deeper understanding of their own skills and professional value.

Such approaches not only enhance students' employability but also make business skills education more accessible and meaningful across non-business disciplines. Encouraging students to connect theoretical knowledge to practical experience fosters transferable competencies that are vital in today's complex and multidisciplinary workplaces.

Limitations of the study

This study has several limitations that should be acknowledged:

Single-institution sampling: The data were collected from postgraduate architecture engineering students at a single university in Jordan, which limits the generalisability of the findings to other institutional or cultural contexts.

Self-reported data: The study relies on students' self-assessment of their skills and perceptions, which may be influenced by social desirability bias or limited self-awareness, potentially affecting the accuracy of the data.

Lack of longitudinal tracking: The research provides a snapshot of students' perceptions at one point in time. Without follow-up data, it is not possible to assess how students' understanding of business skills or their employability evolves after graduation or with further professional experience.

No inferential statistical analysis: While descriptive statistics were used to identify trends and differences between groups, the study did not apply inferential statistical methods (t-tests or regression analysis for example) to test for statistical

significance. This limits the ability to draw definitive conclusions about the strength or generalisability of observed group differences.

Future studies could address these limitations by including multiple institutions, triangulating self-reported data with observational or performance-based assessments, using inferential statistics for greater analytical rigour, and incorporating a longitudinal design to track developmental changes over time.

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Declarations

Conflict of interest The authors declare no competing interests.

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