MALAYSIAN ARCHITECTS' EXPERIENCES ON PERFORMANCE-BASED IDENTITY AND COMPETENCE DEMONSTRATION IN BIM DESIGN MANAGEMENT

By

SYAFIZAL BIN SHAHRUDDIN

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Chair : Mohd Zairul Bin Mohd Noor, PhD
Faculty : Design and Architecture

The inherited identity and competence of an architect as a natural leader, prime decision maker, and creative designer are destabilised in building information modelling (BIM) design management practices. Yet, the macro-level stakeholders in the Malaysian architecture industry are still debating whether to restore their long-lost identity or transform their core values to remain relevant. The current research focuses mostly on architects' adaptive strategies for negotiating their desired identity rather than on their ability to properly perform their way into a variety of identities in such a context. The latter is more important because it reflects what clients value most when hiring architects: competence, performance, and identity. The researcher, therefore, seeks to investigate the lived experience of an architect demonstrating competence and performing his or her way into identities following the contextual change in BIM design management practices.

Drawing upon the interpretive phenomenological research design, the researcher first employed a desk review technique to identify the contextual changes that have triggered the redefinition of architects' inherited identity and competence demonstration in BIM design management practices. Then, the researcher deployed a written account exercise and an in-depth semi-structured interview technique to explore their experiences in demonstrating competence in such an environment. Finally, individual and group member check sessions were conducted to verify their performed identity based on their experiences demonstrating competence following the contextual change in BIM design management.

A thematic analysis resulted in the following contextual changes in BIM design management practices: changes in governmental policy, regulatory standards,

and guidelines; expanding in the scope of services; changes in project hierarchies and authority structures; changes in organisational structure and culture; changes in everyday architectural work processes; and changes in the division of labour. The analytical approaches of naïve reading and thematic analysis also revealed that the architects demonstrated their competence by applying the constructability, buildability, and fire safety measures knowledge in developing BIM models; contextualising BIM terminologies into the existing local industry workflows; dictating the organisational culture; managing personal and team adversity professionally; anticipating the future market; managing the workforce planning; and developing the tool ecologies, to name a few within and across the organisational settings. Finally, individual and group member check sessions resulted in the following seven performed identities: “performing more of a design strategist”, “performing more of a design translator”, “performing more of a design facilitator”, “reinstating the identity as a design coordinator”, “performing more of a design curator”, “performing more of a design innovator”, and “performing more of a design entrepreneur”.

This study contributed to knowledge on three levels: the framework of contextual changes in BIM design management practices, the BIM competence demonstration framework for architects, and the performance-based identity framework of an architect in BIM design management practices. This study could facilitate the Malaysian Institute of Architects (PAM) to restructure continuing professional development (CPD) programmes and reform the standard competence framework to promote architect identity hybridisation and associated competencies in the environment.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Doktor Falsafah

PENGALAMAN ARKITEK DI MALAYSIA TERHADAP IDENTITI BERASASKAN PRESTASI DAN DEMONSTRASI KECEKAPAN DALAM AMALAN PENGURUSAN REKA BENTUK BIM

Oleh

SYAFIZAL BIN SHAHRUDDIN

Julai 2022

Pengerusi : Mohd Zairul Bin Mohd Noor, PhD
Fakulti : Rekabentuk dan Senibina

Identiti warisan arkitek sebagai pemimpin semula jadi, pembuat keputusan utama, dan pereka bentuk kreatif terhakis oleh perubahan konteks dalam amalan pengurusan reka bentuk permodelan maklumat bangunan (BIM). Namun, pihak berkepentingan peringkat makro dalam industri seni bina Malaysia masih membahaskan sama ada mengembalikan identiti mereka yang telah lama hilang atau mengubah nilai teras mereka agar tetap relevan. Kajian literatur seolah lebih tertumpu pada mekanisme daya tindak dinamik arkitek dalam menguruskan identiti profesional mereka yang ideal berbanding bagaimana cekapnya mereka dalam melaksanakan pelbagai bentuk identiti dalam pelbagai situasi. Perkara terakhir ini lebih kritikal kerana pelanggan menganggap kecekapan, prestasi, dan identiti sebagai ciri utama semasa mendapatkan perkhidmatan seni bina. Oleh itu, kajian ini bertujuan untuk meneroka pengalaman hidup arkitek dalam mempamerkan kecekapan dan melaksanakan diri mereka dalam pelbagai bentuk identiti berikutan perubahan kontekstual dalam amalan pengurusan reka bentuk BIM.

Berdasarkan reka bentuk penyelidikan fenomenologi interpretif, penyelidik sebagai permulaan menggunakan teknik tinjauan literatur untuk mengenal pasti perubahan kontekstual yang telah mencetuskan penakrifan identiti warisan dan kecekapan seorang arkitek dalam amalan pengurusan reka bentuk BIM. Kemudian, penyelidik menggunakan latihan penceritaan bertulis dan teknik wawancara separa berstruktur yang mendalam untuk meneroka pengalaman hidup mereka dalam menunjukkan kecekapan dalam suasana tersebut. Akhirnya, sesi pengesahan secara individu dan berkumpulan dilakukan untuk mengesahkan identiti prestasi berdasarkan demonstrasi kecekapan mereka berikutan perubahan kontekstual dalam pengurusan reka bentuk BIM.

Analisis tematik telah menghasilkan perubahan kontekstual berikut dalam amalan pengurusan reka bentuk BIM: perubahan dalam dasar pemerintahan, piawaian dan garis panduan kawal selia; perkembangan dalam skop perkhidmatan; perubahan dalam hierarki projek dan struktur pihak berkuasa; perubahan struktur dan budaya organisasi; perubahan dalam proses kerja seni bina seharian; dan perubahan dalam pembahagian tenaga kerja. Pendekatan analitik pemahaman naif dan analisis tematik juga menunjukkan bahawa arkitek menunjukkan kecekapan mereka dengan menerapkan pengetahuan mengenai kebolehkerjaan, kebolehbinaan, dan keselamatan kebakaran dalam reka bentuk model BIM; mengterjemahkan terminologi BIM ke dalam aliran kerja industri tempatan yang sedia ada; menentukan budaya organisasi; menguruskan masalah peribadi dan pasukan secara profesional; menjangkakan pasaran masa depan; menguruskan perancangan tenaga kerja; dan mengembangkan ekologi alat untuk dalam dan di seluruh tetapan organisasi. Akhirnya, sesi pengesahan secara individu dan berkumpulan menghasilkan tujuh identiti yang dilaksanakan seperti berikut: “melaksanakan diri sebagai pereka bentuk strategik”, “melaksanakan diri sebagai penterjermah reka bentuk”, “melaksanakan diri sebagai fasilitator reka bentuk”, “melaksanakan diri sebagai penterjermah reka bentuk”, “mengembalikan semula identiti sebagai penyelaras reka bentuk”, “melaksanakan diri sebagai kurator reka bentuk”, “melaksanakan diri sebagai inovator reka bentuk”, dan “melaksanakan diri sebagai usahawan reka bentuk”.

Kajian ini telah menyumbang kepada badan ilmu dalam tiga tahap: kerangka perubahan kontekstual dalam amalan pengurusan reka bentuk BIM; kerangka demonstrasi kecekapan BIM untuk arkitek; dan kerangka identiti berasaskan prestasi dan demonstrasi kecekapan seorang arkitek dalam amalan pengurusan reka bentuk BIM. Kajian ini juga berfungsi sebagai landasan bagi Pertubuhan Arkitek Malayisa (PAM) untuk membina semula program bagi pengembangan profesional secara berterusan (CPD) dan mereformasikan kerangka kecekapan standard untuk mempromosikan hibridisasi identiti dan kecekapan seorang arkitek untuk berkerja dalam suasana tersebut.

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“There is no power and no strength except with Allah”

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfillment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

Mohd Zairul bin Mohd Noor, PhD
Associate Professor
Faculty of Design and Architecture
Universiti Putra Malaysia
(Chairman)

Meor Mohammad Fared bin Meor Razali, Ar
Associate Professor
Faculty of Design and Architecture
Universiti Putra Malaysia
(Member)

Ahmad Tarmizi bin Haron, PhD
Associate Professor
Faculty of Civil Engineering Technology
Universiti Malaysia Pahang
(Member)

_____
ZALILAH MOHD SHARIFF, PhD
Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

Date: 12 January 2023

Declaration by graduate student

I hereby confirm that:

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Signature: _____ Date: _____

Name and Matric No.: Syafizal Bin Shahruddin

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BIM	Building Information Modelling
ACPs	Architectural Consultancy Practices
LOD	Level of Detail
LOG	Level of Graphical
LOI	Level of Information
WIP	Work in Progress
CDE	Common Data Environment
LAM	Board of Architects Malaysia
PAM	Malaysian Institute of Architects

CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter begins by providing the context and background of the study (section 1.2). Next, it narrows them down to the specific motivational and research problems of the study (section 1.3). The identified problems, subsequently, give rise to the development of main research questions (section 1.4) and objectives for the research (section 1.5). Afterwards, this chapter explains the significance of the study (section 1.6), its scope and its limitations (section 1.7), the organisation of the thesis (section 1.8), and operational definitions within the present study (section 1.9).

1.2 Context and Background of the Study

The contentiously game-changing fourth industrial revolution (IR 4.0) has revolutionised manufacturing and its associated services towards becoming smart, systematic, efficient, and resilient in contributing to world economic growth. Considering that the construction industry also has a direct contribution to solving socio-economic problems, the transformation of construction business practices worldwide through the adoption of high-tech strategies is no longer seen as an option (World Economic Forum, 2018).

Malaysia's Ministry of Works (JKR) through the Construction Industry Development Board (CIDB) and other associated bodies, have developed the Malaysian Construction 4.0 Strategic Plan (2021–2025) to boost the construction industry's productivity, particularly via disruptive technologies (CIDB, 2020a). The effective utilisation of digital technologies such as artificial intelligence (AI), internet of things (IoT), immersive technologies, cloud computing, 3D printing, and additive manufacturing in the era of construction 4.0 is dependent on digital data and information being available across an asset's life cycle (Maskuriy et al., 2019). Building information modelling (BIM) can create, federate, share, and manage an asset's digital live information in a single repository system, making it the heart of construction 4.0 (RIBA & Microsoft, 2018). Hence, it is a precondition for the local construction-industry players, including the architects, to demonstrate that they are comfortable delivering their daily tasks digitally in a BIM environment.

Nevertheless, the adoption of BIM does not only demand technical and technological changes but also imposes grave social-cultural implications on design management practices, particularly on the value of design and the

identity of an architect (ACE, 2019). Design value re-evaluation in the tech era necessitates more specialism in directing certain areas of an organisation's digital delivery process of design management as well as in an asset's life cycle (ACE, 2019). As project complexity and demand for quality architectural services increase, architects' inherited performance identity as natural team leaders has been co-opted by other stakeholders, and their core services have been distributed to specialist parties (e.g., information managers, design technology specialists, and BIM specialists) (USP Marketing Consultancy, 2019). To put it differently, becoming an expert or a specialist in various fields at once is almost unattainable by architects, particularly within this highly specialised industry at present (Berita Arkitek, 2020).

Such social-cultural implications at the global scale justify the rationale of outlining "people" as one of the key enablers towards supporting a five-year-strategic plan of construction 4.0 in Malaysia (CIDB, 2020a). In such a case, local individual architects are left with no choice but to re-evaluate their routined practises and shift their inherited identity in order to maintain their relevance by practising BIM design management practises (Berita Arkitek, 2021a). The performance identity refers not only to how an architect perceives himself/herself to be in respect of an activity, but also to how he/she acts, behaves, and performs competently in it.

Accordingly, the Malaysian Institute of Architects (PAM) past president Lilian Tay, asserted that architects can only re-establish their identity and regain trust for the profession from the community of practice by demonstrating their competence in contributing to the added value of projects and the built environment (The Edge Malaysia, 2019). In truth, an architect's performance, and level of competence in design management have been substandard. The PAM Promotion of Profession Committee's "Survey on Clients' Perception of Architects and Their Services" showed that Malaysian architects must improve their performance in unlocking a project's business value, consulting team leadership, maintaining communication, and anticipating and solving problems to remain competitive in a digitally mediated environment (Berita Arkitek, 2021b). This substandard performance is even more controversial following architects' lack of competence in delivering project values in a BIM environment (Ahmad Jamal et al., 2019; A. Akintola et al., 2017; Papadonikolaki et al., 2019; Sinclair, 2019b). *Competence* is used in this study to refer to an individual's cognitive, personal, and functional sets of interlocking competences in performing occupational- and organisational-specific BIM related tasks.

The report of the survey conducted by the PAM Promotion of Profession Committee has further reinforced the researcher's prior experiences working with a BIM-based architectural consultancy practise in Kuala Lumpur and undertaking industrial training placement with a main contractor organisation. The researcher discovered that many of the complications regarding BIM related tasks during the construction stage (e.g., double handling work,

remodelling of architectural BIM models, and design discrepancy) could be mitigated much earlier on should the design value exploration, design development, and documentation be managed directly in a BIM environment. The architectural consultants for the project at the time, nevertheless, were not adequately competent to deliver their work digitally. Consequently, the authority and design leadership previously held by the architects were transferred gradually to a third party, the BIM consultant in this case. To have a greater influence on design management practices, architects must acquire a diverse set of competencies, transcend their routined practices, and challenge their core values.

1.3 Problem Statement

Despite the fact that macro-level stakeholders are currently discussing the social and cultural consequences of BIM, architects' diminishing performance identity and competency as natural leaders have lasted for decades. A preliminary research based on an informal engagement with the PAM Research and Futures committee and participation in the webinar "Envisioning Architecture Education for Malaysia 2030," hosted by the Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, suggested no concrete conviction on whether to restore an architect's status as a natural leader or to accept that project values in BIM design management cannot longer be single-handedly championed by an architect anymore. The discussion has so far centred on technological infrastructure compliance as opposed to the value shift in the identity and competence of an architect practising in such an environment (Berita Arkitek, 2020). Studies carried out by practitioners appear to have been executed by methods that preclude scientific validation. Their "investigations" appear akin to quick litmus tests to gauge where the profession is heading. There is evidently a lack of consensus on how to approach the challenge as a whole, which presents an opportunity to interact with micro-level performers and investigate how they have exhibited their competence and reflected their varied identities in BIM design management practices. If the known gaps in the field are not filled, architects may become irrelevant and relegated to merely aesthetic building surgeons within an organisation, project, or industry (Frimpong & Dansoh, 2018; Shahruddin et al., 2022).

BIM design management literature mainly concerns the development framework of design process creation, information exchanges, design coordination, design collaboration, detailed design tasks management and design tracking changes as opposed to architects' competence demonstration in an organisation and project (Jacob & Varghese, 2018; Kalach et al., 2021; Mehrbod et al., 2019; Murguia et al., 2017; Pikas et al., 2020; Uusitalo et al., 2019). Further, rather than discussing how competently individuals have behaved and acted their way into the various forms of identities in such an environment, the identity literature seems to centre on architects' dynamic coping strategies in reclaiming their ideal professional identity (e.g., S. Ahuja et

al., 2017, 2019, 2020; Bos-de Vos et al., 2019). The former is more important since it reflects what clients value most when hiring architects: competence, performance, and identity (Berita Arkitek, 2021b; Frimpong & Dansoh, 2016). In fact, their manifestation in a specific type of performance is primarily induced by how they demonstrate and prioritise the competencies required in everyday work activities (Davies, 2019). Previous research has embraced the theoretical lenses of "professional identity" and "organisational identification" in an attempt to make sense of this complexity, but this is unlikely to be sufficient (see Section 2.5.1 for detailed discussion). Given the gaps in both practise and research on the phenomenon, this study seeks to investigate how a change in BIM design management practices triggers architects' sense of competence demonstration and performance identity.

1.4 Research Questions

The problems addressed give rise to the following research question: How does an architect demonstrate his/her competence and perform his/her way into identities following a contextual change in BIM design management practices? The specific research questions and associated deductive codes are systematically shown in Table 1.1.

Table 1.1 : The alignment between the main aim of the research, main research questions and specific research questions

Research aim: The main aim of the study is to explore the lived experience of an architect demonstrating competence and performing his/her way into identities following the contextual change in BIM design management practices	
Main research question (RQ): How does an architect demonstrate his/her competence and perform his/her way into identities following the contextual change in BIM design management practices?	
Deductive codes	**Description of sub-research question (RQ)**
Contextual change in BIM design management	Sub-RQ1: What contextual changes that have triggered the redefinition of inherited identity and competence of an architect in BIM design management practices?
Competence demonstration	Sub RQ2: How does an architect demonstrate his/her competence following the contextual changes in BIM-design management practices?
Performance identity	Sub RQ3: Why does an architect perform his/her identity in such a manner in relation to the experiences of demonstrating competence in BIM design management practices?

1.5 Objective of the Study

The main objective of the study is to explore the lived experience of an architect demonstrating competence and performing his/her way into identities following the contextual change in BIM design management practices. The main objective of the study is further broken down into the following three specific research objectives:

a. To identify the contextual change that has triggered the redefinition of an architect's inherited identity and competence demonstration in design management practices.

b. To explore the architect's experience in demonstrating his/her competences following the contextual change in BIM design management practices.

c. To clarify the performed identity of an architect based on his/her lived experiences demonstrating competences in BIM design management practices.

1.6 Significance of Study

The Malaysian architectural community are divided in their understanding of the social-cultural and professional identity implications of BIM. The professional and statutory bodies have not shown conviction, either by reclaiming the inherited identity as a natural leader or by transforming into the various performance identities, to remain relevant in the industry. Architects' acceptance of their nature or work has been destabilised in a BIM environment should also be reflected in the way they manifest themselves in a social practice setting (Cole, 2019). Hence, the newly developed framework of performance-based identity and competence demonstartion (Figure 5.1) may inform the architectural institutions of how the core beliefs, values, motivations, identity, and competencies of this new age of architects are manifested in the setting. Their experiences may serve as a groundwork to rebuild current architectural continuing professional development (CPD) programmes, materials, and framework towards promoting architect identity hybridisation and related competencies in the environment. Architects' experiences drawn from the study may also enlighten architectural curriculum designers on the contemporary pedagogical methodologies, instructional materials, and assessment procedures to enable future architects to exhibit the necessary competences in a real-world situation.

The findings will extend the identity literature by offering new insights into how an architect experiences his/her work in a BIM design management, particularly from a fresh theoretical perspective. Interpreting the phenomenon through performance-based identity theory instead of professional identity and

organisational identification may assist scholars' understanding of how an architect makes sense between self-knowledge and the works they do daily related to BIM design management. The theoretical concept of performance identity has not been empirically explored in such a phenomenon. The study also pioneers the exploration of the complex interplay of cognitive, personal, and functional interlocking competences experienced by an architect in organisational and individual BIM-based projects. The consideration of both contexts is pivotal as competence demonstration is very much context-dependent, yet previous scholars have offered no explanation for the distinction between the competencies needed in performing organisational generic tasks and project-specific tasks within BIM design management practices. The study also bolsters the BIM design management literature from the perspective of individuals' reactions, behaviours, and actions, as opposed to the technical views of information management, design coordination, and collaboration processes. This endeavour will connect the envisioned practices and the actual experiences of architects performing in BIM design management.

As far as the lived experience of architecturally-trained individuals is concerned, their performance identity and associated competencies in a BIM environment have been found to be prescriptive rather than interpretive. The data collection methods employed by the previous studies failed to elicit how and why individual architects express themselves in such a way in BIM design management practices. The phenomenological research design has been widely deployed only within the medical, nursing, healthcare, and child development areas of research. Hence, methodologically, the study contributes by combining the fundamental principles of phenomenology with methodological features of Manen (2016), Lindseth and Norberg (2004), and Nigel King (2012) to capture the most detailed aspects of the lived experience of an architect within the phenomenon. The methodological procedures may serve as an innovative reference for other scholars, particularly in the performance identity, BIM design management, and competence demonstration research fields.

1.7 Scope and Limitation of Study

The main subject of the study is narrowed down to the existing individual architects as opposed to the emergent and stand-alone roles of BIM. The exploration centres on their manifestation into the various performance identities and new areas of competence demonstration in BIM design management. Such focus could be explained by the fact that new BIM roles are anticipated to merely serve as a transitory response to the present insufficiency of BIM expertise among the existing core professionals (A. Akintola et al., 2017, 2020; Hosseini et al., 2018).

The architects involved in the study are also limited to those who work for architectural consultancy practices (ACPs) rather than those serving main

contractors and client organisations. The site selection was determined based of the argument that design services, i.e., the creation of the digital model and corresponding data, come from the author primarily as the lead consultant. Clients do not perform these services, and neither do contractors. Even in a design-and-build arrangement, there will still be an architect that authors the BIM model primarily.

Furthermore, the study limits its scope to architects' practises in the Malaysian construction industry only. The decision was made based on the fact that local practising architects are increasingly losing competitiveness against talented and innovative foreign architects due to a lack of specific expertise in utilising design and construction technologies in translating project values into a reality (Fadzil, 2021). This gap prompted the researcher to engage with highly specific and talented architectural individuals at the grassroots level and investigate how they have demonstrated their competencies and manifested their way into various identities in BIM design management practices.

Theoretically, the study is limited to the performance identity, competence demonstration, and BIM design management's theoretical perspectives. Considering that the main subjects of the study are the architecturally trained individuals and their lived experience in a specific context, the theoretical concept of performance identity seems appropriate; it concerns the type of performer individuals perceive themselves to be in respect to an activity. Their manifestation of a specific type of performance is anticipated, particularly how they have demonstrated and prioritised their knowledge and skills competently in their daily work activities. Hence, the integration of performance identity and competence demonstration's body of knowledge towards exploring the phenomenon. Because the essence of design in a digitally mediated project appears to be diluted into project management and procurement processes, it is sensible to contextualise the performance identity and competence demonstration of an architect within the disciplinary knowledge of BIM design management practices.

1.8 Organisation of Thesis

This study comprises of six chapters. The content of each chapter is structured as follows.

Chapter 1

Chapter One presents the background of the study, the statement of problem, the main research question, the aim and the objectives of the study, the significance of the study towards the field of practice and body of knowledge, and the scope and limitation of the study.

Chapter 2

Chapter Two discusses the inherited identity and competencies of an architect in conventional practice. The first section discusses an architect's inherited identity and associated competencies as perceived by their practice community and institutional environment. The second section explains the contextual change that has triggered the redefinition of an architect's performance identity and associated competencies in design management practices. The third section debates the competence demonstration expected from an architect in such settings. The fourth section consolidates the types of performance identity expressed by an architect. The last section consolidates previous priori concepts and theory into a form of "conceptual framework on performance identity and competence demonstration of an architect in BIM design management" to frame the research inquiry.

Chapter 3

Chapter Three discusses the specific six core components of interpretive phenomenology research design that include the phenomenological orientation of the researcher; the sampling strategy and procedures; the lived experience investigation; the essential themes reflection and isolation; the themes validation; and presentation.

Chapter 4

Chapter Four is structured into five parts. Part one reaffirms the themes and the associated categories of contextual change derived from the secondary resources. Part two provides the researcher's immediate thoughts and reactions (naïve understanding) to individual accounts in performing their identity and the associated competencies in BIM design management practices. Part three presents the themes of cognitive, personal, and functional interlocking competencies demonstrated by an architect in such settings. Part four provides the reasoning behind the various performance identities manifested by an architect in BIM design management practices. Finally, part fives explains the emerging themes derived across the findings of second and third sub-RQs.

Chapter 5

Chapter Five is structured into three major sections. The first section provides the reflective opinions of the researcher towards supporting the robustness of the study. The first section discusses the validated themes in light of the relevant literature. The final section discusses the logic of the translation of the analysis and findings into the revised framework.

Chapter 6

Chapter Six deduces the achievement of research, reflects the knowledge, practical, and methodological contributions of the study, discloses the limitations encountered throughout the research, and finally puts forward the future research recommendations based on the emerging themes. Figure 1.1 provides a schematic overview of the research process across the six chapters.

1.9 Operational Definitions

Contextual change: An event or situation that problematises and challenges the routinised practices, activities, and actions of individuals in a work environment (Lepisto et al., 2015).

Cognitive competence: The abilities to apply the conceptual, disciplinary, procedural, and contextual related knowledge into practice settings (Shahruddin et al., 2021).

Personal competence: The ability to successfully demonstrate and regulate attitude, conduct, and personality factors in work-related settings (Shahruddin et al., 2021).

Functional competence: The abilities to perform occupational- and organisational-specific ranges of work (Shahruddin et al., 2021).

Individual BIM competence: The cognitive, personal, and functional competences of individuals in performing occupational- and organisational-specific BIM related tasks (Shahruddin et al., 2021).

Performance-based identity: The theoretical concept of performance-based identity primarily revolves around the type of performer individuals perceive themselves to be in respect of an activity (Walker & Caprar, 2020). Individuals may not only perceive their way into a specific type of performance, but also behave, act, and express themselves competently into it (Ashforth et al., 2008; Walker & Caprar, 2020).

Professional identity: Professional identity may be defined as an individual's collection of attributes, values, motivations, and experiences that, despite obstacles and expectations, remain largely consistent, preserved, and lasting in a certain professional role. (Ibarra, 1999; Muzio & Ackroyd, 2005; Wilson et al., 2013). That is to say, professional identity concerns what individuals do for work (commonly interpreted in a wider social domain) rather than how well and

competently individuals perform their work (subjectively interpreted on a daily job basis) (Walker & Caprar, 2020). The latter is what scholars typically associate with a performance-based identity.

BIM design management practices: An area of activity uptake by practitioners in managing the interlocking dimensions of business, process, people, technology, and knowledge within the internal organisations while complying with the commercial requirements of project preparation, design, documentation, and project delivery within the context of a BIM environment (Emmitt, 2014; Shahruddin et al., 2021).

Interpretive phenomenology: Interpretive phenomenology is a qualitative research design that focuses not only on describing the essential themes of the phenomenon but also on understanding and interpreting them in relation to the context in which the informants lived. The informants' experiences are typically interpreted against the researcher's past experiences and the theoretical underpinnings of the study rather than limited to the pure subjectivity of a phenomenon (Manen, 2016; J. A. Smith, 2004).

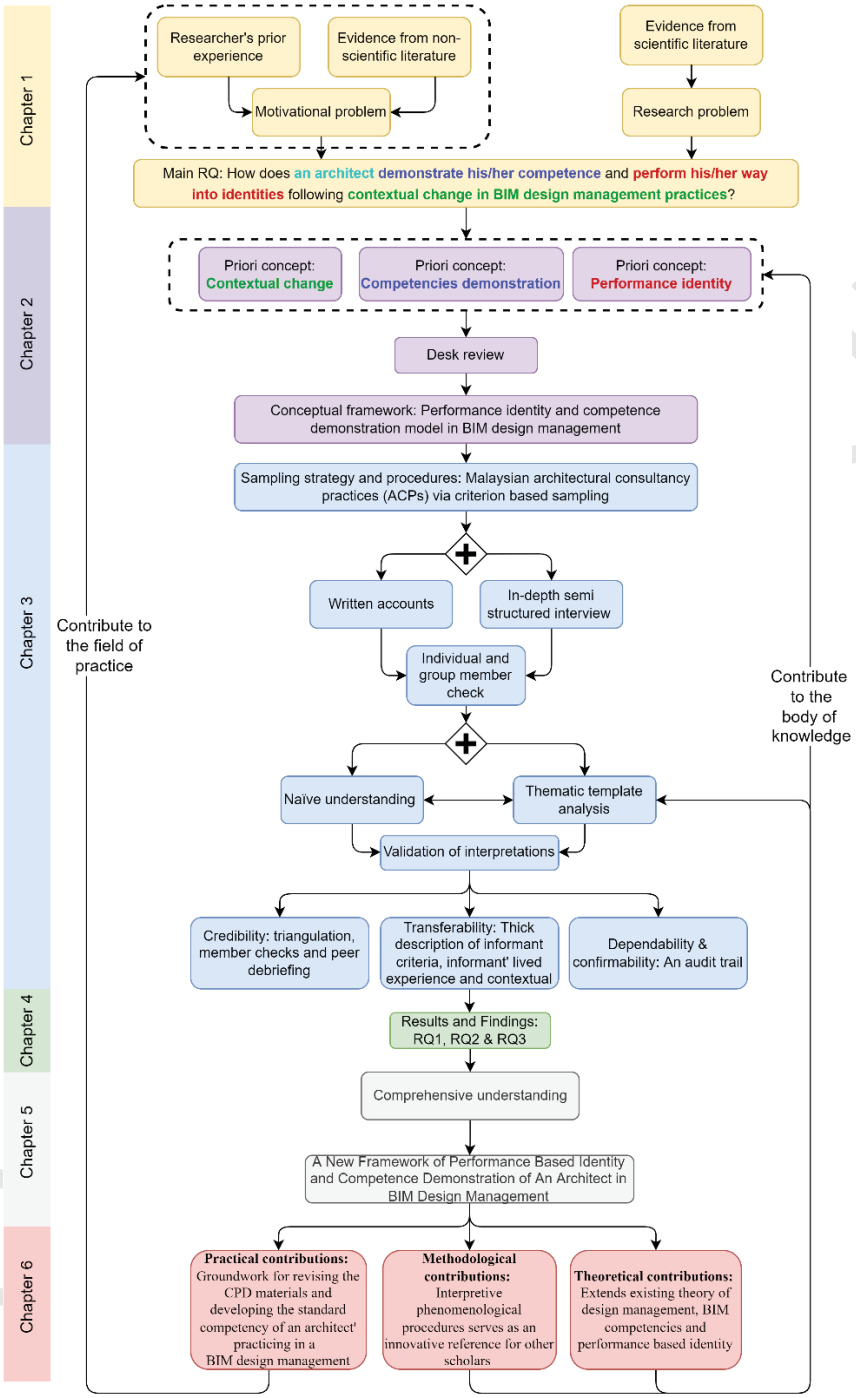

Figure 1.1 : Research process
(Source: Author, 2021)

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