THE CONTRIBUTION OF ISLAMIC SUPPLY CHAIN MANAGEMENT PRINCIPLES TO THE FRONT-END OF LARGE-SCALE CONSTRUCTION PROJECTS

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DECLARATION OF ORIGINALITY

I, Mohamad El Daouk confirm that the work presented for assessment in this dissertation is my own, that it has not previously been presented for another assessment and that my debts (for words, data, arguments and ideas) have been appropriately acknowledged.

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I would like to acknowledge that I chose the following dissertation's topic in order to expand on the existing academic literature on supply chain management as a humble, yet sincere, token of respect and appreciation for the priceless contributions of the late Professor Stephen Pryke, may he rest in peace.

I am also very grateful for the sound and continuous guidance that Dr Andreas Credé had given me in writing of this piece. He has my utmost gratitude.

ABSTRACT

The following dissertation studies Islamic supply chain management as taken from the food industry. The dissertation seeks to take the synonymous moral and contractual principles of Islamic supply chain management and apply them to the United Kingdom's construction industry. Hereby, the dissertation endeavours to import a new concept into construction project management; akin to the importing of supply chain management principles from the manufacturing industry to the construction industry, by prominent individuals such as the late Professor Stephen Pryke.

The focal points of this dissertation will be examining and applying key Islamic financial, contractual, and moral principles on the front-end of large-scale construction projects. The aim sought is to illustrate how longstanding behavioural, adversarial and transactional problems associated with the construction industry can be alleviated through the application of Islamic supply chain management principles. Thus, the author hopes that this dissertation can offer a new set of moral-based concepts that can become part of supply chain management's greater academic literature.

Keywords: Islamic supply chain management, *Halāl* integrity, Front-end, Stage-gate reviews, *Halāl* traceability.

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LIST OF FIGURES

(***ALL FIGURES in the main Chapters*** *were drawn by the author and are not copy-pasted from other sources*)

LIST OF ABBREVIATIONS

ADRMs: Alternative dispute resolution methods

EOT: Extension of time

HPP: Holyrood Parliament Project

IoCE: Institution of Civil Engineers

ISCM: Islamic supply chain management

LAD/LADs: Liquidated and ascertained damages

LSCP/LSCPs: Large-scale construction project/s

PP/PPs: Project practitioner/s[1]

PMI: Project Management Institute

SCA/SCAs: Supply chain actor/s[2]

SCM: Supply chain management

UKCI: United Kingdom (of Great Britain and Northern Ireland)'s construction industry

[1] A project practitioner can be: the client; contractor; sub-contractor(s); trade contractors; architects; designers; quantity surveyors; contract administrator; and project manager.

[2] A supply chain actor can be: the main contractor, all the tiers of sub-contractors, and any tier of suppliers.

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1.INTRODUCTION

LSCPs, SCM, ISCM, and the Islamic tradition

The UKCI is a vast sector that shares poor-behavioural, adversarial and transactional attitudes (Pryke, 2020). Such characteristics are often reflected upon during projects and on construction sites. Projects are generally seen as temporary organisations aimed towards delivering new value (Bakker, 2010; Green *et al.*, 2004). *Figure 1* illustrates the transactional build-up of cost across the supply chain as a result of each SCA focusing on their own profit (*Overhead and Profit*): –

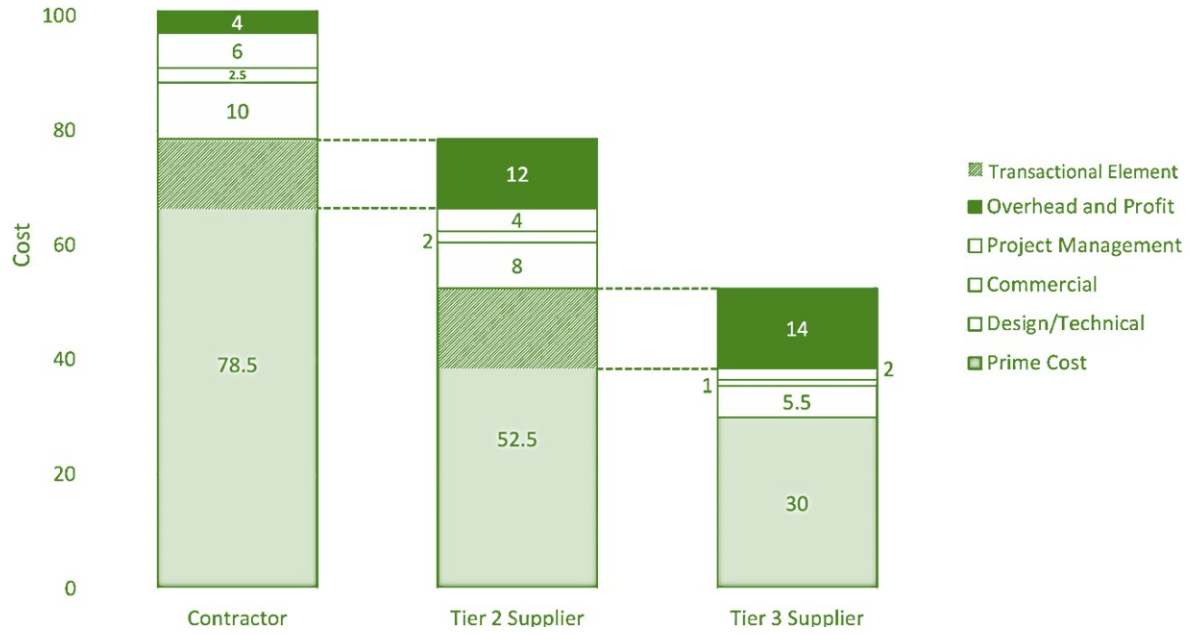

Figure 1: adapted from IoCE (2017).[3]

LSCPs are no different to ordinary construction projects in that regard but tend to require more enduring relationships, arrangements and contractual duties. The long timespans of LSCPs, and the cost associated with carrying them out, are what distinguish LSCPs from ordinary projects. In LSCPs, PPs and SCAs require an abnormal degree of commitment and proactive involvement before, during, and after the LSCP (Denicol, 2020).

LSCPs are customarily unique by the volume of financial and material resources required to deliver and operate them (Kardes *et al.*, 2013). They can range

[3] The *Transactional Element* is the financial floor that the next higher SCA must bear with as a result of the preceding supplier's charged overhead.

in cost from £50mn to £1bn or more (Fioro & Kovaka, 2005), and are often subjugated to conditions where information uncertainty is stupendously high (Boateng *et al*., 2012). PPs are also met with very high risk and complexity (Priemus, 2010). Complexity does not insinuate difficulty, but rather, the extent of innovative, complex, and cutting-edge solutions required throughout the LSCP's lifecycle to deliver it (Hayleigh, 1999).

For that, LSCPs commonly fail due to being inapt to deal with such factors, which can lead to cost overruns (Flyvbjerg *et al.,* 2003), and financial insolvency (Han *et al*., 2009). Also, the footmark left behind LSCPs on the lives of people does not always go as planned. Certain impacts of LSCPs can carry different effects on different stakeholders at different times (Aaltonen, 2011).

Alongside LSCPs lies SCM, which dates back to the 1980s. SCM involves the cyclic management of a network of firms, interconnectedly undertaking work to produce the end-customer's demanded product (Harland, 1996). SCM principles focus around integrating key functions in the supply chain, to produce a recurring successful work environment (Mehdi Riazi & Nawi, 2018). Thus, all levels of the supply chain are often hinged towards the requirements of each LSCP (Croom *et al*., 2000; Vrijhoef *et al*., 2000).

When looking at SCM principles in a construction context, the key principle is to orientate the supply chain based on the project at hand. This is dissimilar to SCM in a manufacturing context, under which the supply chain is focused on the repetitive production of many of the same product. In LSCPs, the supply chain is orientated towards delivering a unique and once-in-a-lifetime construction project.

Thus, SCM in LSCPs carries processes that are less repetitive in nature, but that remain similar in one form or another to supply chains of ordinary projects (Papadopoulos *et al.,* 2016). Other SCM principles include: –

- the early proactive involvement of SCAs with one-another in the front-end;
- systematic integration (Power, 2005);
- incentivisation (Blundell, 2020; Hughes *et al.*, 2012);
- relationship contracting (Pryke, 2009); and
- collaborative engagement (Denicol *et al*., 2017).

SCM principles are not exclusive to certain phases of the LSCP. Rather so, they can effectuate and apply analogously during the front-end and other segments of the project lifecycle. Oppositely, SCM's flaws have been related to its inability to continuously bolster good attitudes and collaboration in LSCPs (Briscoe *et al.,* 2004). Further literature from which this paper interprets SCM can be found under *Appendix 1*.

Moving on to the front-end, it is often linked to the early phase of the LSCP where decisions are critical, yet unclear (Biesek & Gil, 2014).

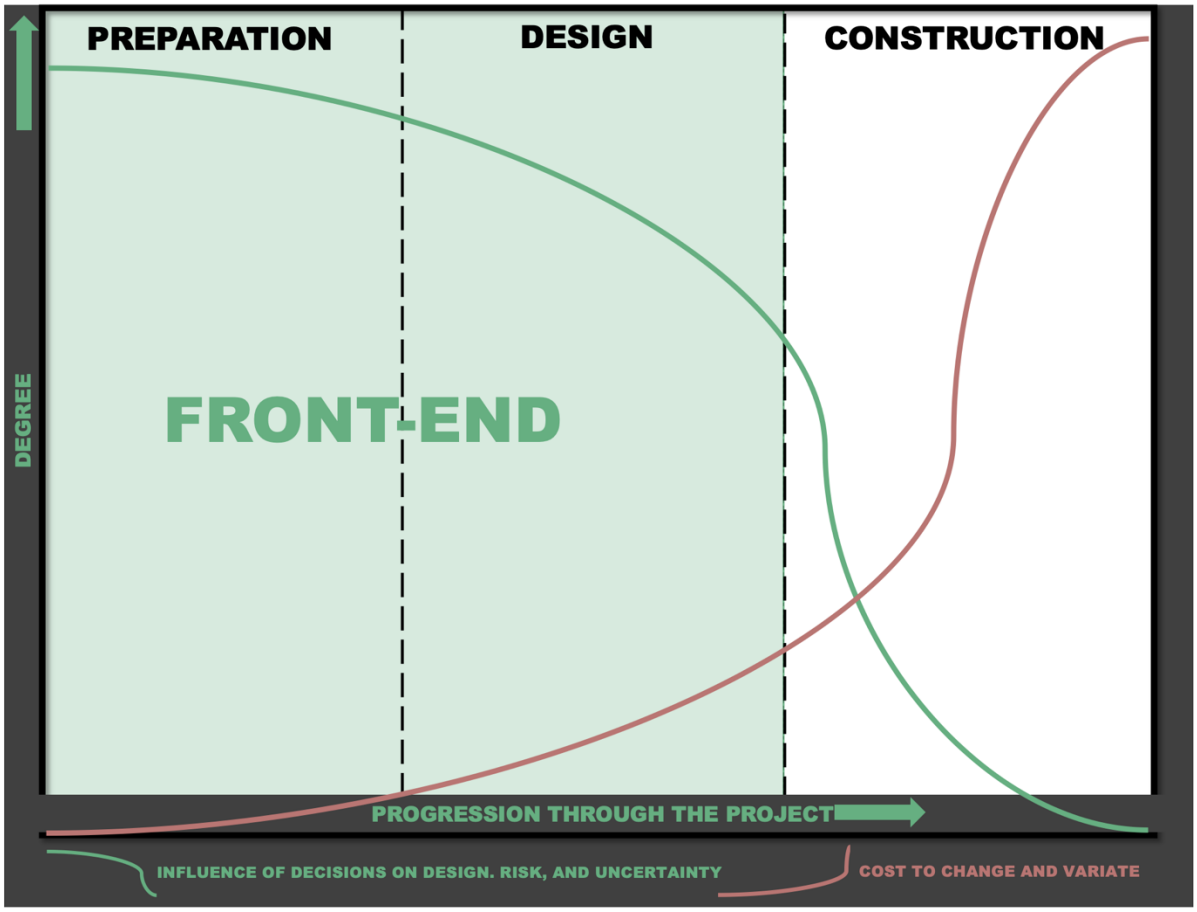

Figure 2: Adapted from PMI (2008).

Figure 2 presents how early decisions in the green-shaded front-end require less cost to implement, as opposed to later decisions in the back-end, where the cost to implement any variation is exponentially high. This highlights on the importance of properly organising and clarifying the front-end, which is a key ISCM requirement. Although there is no unitary definition of the front-end, it has often been regarded as the preliminary development phases of the project (Morris, 2011).

ISCM is the concept by which a product must undergo *Shariah*-compliant processes from its inception until its completion and delivery (Khairuddin *et al.,* 2019). The key principle under ISCM is *halāl* (permissible), meaning that the practices and processes undertaken throughout the supply chain are permissible; and that the final product itself is permissible. Another key principle, particularly associated with ISCM in the food industry, is *halālan-tayyiban* (Khairuddin *et al*., 2019). *Halālan-tayyiban* adds an additional rigour to the *halāl* integrity of a product by assuring that the final product is healthy and non-harmful.

These concepts are all derived from the religion of Islam, which means the submission to God (Ramadan, 2017). Islamic law, in the eye of the Muslim, is the righteous and all-inclusive way sent by God through the *Qur'ān* and the prophetic traditions of the Prophet Muhammad (Daniels, 2017). The *Shariah* is the canonical law of Islam, which directs and protects the welfare of a Muslim's everyday life (Khairuddin *et al.,* 2019). Thus, the *Qur'ān*, followed by the *Sunnah*, are Islamic law's primary sources (Ahmad, 2018), whereas *Ijmā'* and *qiyās* are the secondary sources of Islamic law.

The *Qur'ān*'s authority is absolute, whilst the *Sunnah* is based upon the Islamic scholars' witnessing of Prophet Muhammad's apothegms (Spells, 2009). *Ijmā'* is where Islamic scholars unanimously rule new laws over matters not present in the *Qur'ān/Sunnah* (Abdulla & Keshavjee, 2018). *Qiyās* is the analogical deduction of Islamic scholars of Islamic law in order to harmonise it with contemporary society. Examples of *qiyās* are the Islamic finance contracts in Chapter 2 and Chapter 3.

Research aim, objectives, and expected findings

The research aims to introduce and illustrate ***how ISCM's moral and contractual principles can benefit LSCPs by alleviating longstanding problems associated with the UKCI***. Such problems entail adversarial and transactional practices (Pryke, 2020). To achieve this aim, three research objectives must be met:

RESEARCH OBJECTIVE	RESEARCH QUESTION
To illustrate that ISCM's incorporation of Islamic contracts and moral principles offer new solutions to LSCPs.	What are key Islamic moral principles and contracts under ISCM that are not equally accentuated under SCM?

To illustrate that ISCM contributes to the front-end, by further enhancing existing techniques (*i.e.* stage-gate reviews).	How and why does ISCM retrospectively review key milestones, unlike stage-gates which have a one-time review process per key milestone?
To demonstrate the benefits of ISCM's benefits by explaining them and applying them to a LSCP's front-end.	How would have ISCM dealt with challenges, such as risk and cost overruns, that led to HPP's failure?

Figure 3: author's own.

The ***expected finding*** should show a positive contribution of ISCM to the front-end of LSCPs, despite possible limitations. However, such contribution is likely to happen where the PPs and SCAs allow ISCM to thrive. Having said that, it is expected that applying ISCM principles do not guarantee front-end/overall success of the LSCP, but rather amplifies the likeliness of the LSCP succeeding.

Research methodology, suitability, validity, and limits

The ***primary research methodology*** adopted to present this paper is a comparative documentary analysis of secondary sources which will then be applied to the HPP case study. Such sources are published academic journal articles that cover the principles of ISCM and SCM, and UK-government reports on HPP. Given that ISCM has never been used in a UK construction context before, the methodology is ***suitable*** because it will verify the research questions by applying the existing ISCM-literature on the case study pertained. The methodology could have incorporated interviews with UKCI practitioners. However, the unfamiliarity of construction ISCM to such practitioners would have required workshops explaining it prior to carrying out interviews. This was impractical to do, and this is further justified in *Appendix 2*.

The application of ISCM in the UKCI is ***genuine research*** and should be one of, if not the first of its kind, in construction project management. This dissertation meets ***validity*** and ***reliability*** requirements by using existing academic literature relating to ISCM, SCM and project management. It further reinforces the information's reliability by applying the points drawn and analysed from the literature to HPP. The dissertation is ***limited*** to the principles and concepts that are pertinent to ISCM and SCM as explicated in this dissertation. Therefore, there will be no focus on analysing any principles not laid out in this Introduction, the Literature Review, or *Appendix 1*.

The paper will first layout the literature review. Subsequently, ISCM's techniques/tools, contributions and benefits will be analysed. Successively, ISCM's contribution to the front-end of LSCPs will be clearly illustrated, analysed and then applied to the case study in order to further illustrate ISCM's benefits. Lastly, the paper will critically analyse ISCM's limitations and how to overcome them, before concluding the entire dissertation.

2.LITERATURE REVIEW

ISCM

ISCM, like SCM (Pryke, 2020), originates from the manufacturing industry and not the UKCI (Khairuddin *et al., 2019*). In the modern age, it has been evidenced that the client has become the key demanding factor driving firms to produce and deliver at a certain quality (Annabi & Ibidapo-Obe, 2017). For the average Muslim, *halāl* products involve the consumption/use of *Shariah*-compliant products (Latif *et al*., 2014). This is in a manner similar to the standard/quality that a modern client expects from a renowned producer (Jamal & Sharifuddin, 2015; Soon *et al.*, 2017).

When looking at ISCM, *halāl* is a domain in its own right for conducting modern business (Lada *et al.,* 2009). The reason for that is the ability of *halāl* being a model that can assure good behaviour and quality, through the moral principles it enshrines above commercial ones (Khan & Haleem, 2016). The primary Islamic law principle defining *halāl* stems from the *Qur'ān* (2:168), instructing Muslims to only consume from all that is lawful and wholesome. Anything non-wholesome is *harām* (forbidden).

Generally, ISCM emerged as a solution to provide Islamic societies with a reliable way to ensure they consume *halāl* food that abides by *Shariah* requirements (Arif & Ahmad, 2011). Yet, as Alzeer *et al.* (2018) explicate under Islamic law, *halāl* as a concept extends beyond food requirements and covers every aspect of one's life. The principle of *halāl* has been pertained as an integrity measure for the production of material, substance, capital flow, finance and the information processes related to a given product/service (Ali *et al*., 2017; Haleem & Khan 2017).

Henceforward, from this perspective, one can apply the principle of *halāl* and other ISCM principles to LSCPs, and the UKCI at large (Ngah *et al.*, 2015). This is why the moral and human values of the *Shariah* are perpetual. Therefore, they are analogously applicable in other fields such as Islamic finance and construction (Arif & Ahmad, 2011).

Terms in the academic literature that are synonymous with ISCM are *Halāl* Supply Chain Management (Khan *et al*., 2018), and *Shariah*-compliant Supply Chain Management (Khairuddin *et al.*, 2019). Additionally, ISCM is routed in Islamic finance principles, which collectively enshrine cost certainty (Belouafi & Chachi, 2014), risk

elimination (Al Rahahleh *et al.,* 2019), and quality assurance (Nugroho *et al*., 2018). These are all guaranteed under Islamic moral and contractual principles, which stem from the same *Qur'ānic* principles of *halāl* and *harām*. Such principles advantageously share synonymous collaborative, integrational and profit-loss sharing characteristics. The end-goal of such principles in any context is to promote better co-operation and less adversarial stances between different parties.

In the context of LSCPs, any elements forming valuable substance in the front-end will yield beneficial returns in the subsequent stages of the project lifecycle. Thus, the supply chain in the front-end should be directed from a value-orientated and customer-focused approach (Kumar & Ostor, 2004). For this, it is argued that a key advantage of ISCM is placing *halāl* integrity as the principal client requirement to prevent any form of substitution, disingenuity or deceit (Manning & Soon, 2014).

By doing that, a strict moral and contractual code directs the supply chain to ensure that the LSCP will be executed through good and fit means. Ali, Tan and Ismail (2017) also suggest that *halāl* integrity extends until the final product is consumed by the final consumer. Therefore, the processes within the LSCP's front-end would have to always be *halāl* certified in order for the project to materialise and be carried out.

Moral principles upon which ISCM is based

An Islamic financial arrangement is based on legal principles that are different to that of English law. Unlike English law, under Islamic law, everything is considered permissible until a *Qur'ānic* or Islamic law explicitly deems it forbidden (Dewar, 2011). Thus, in construction, all parties are bound by being *Shariah*-compliant. The keystone *Shariah* principles forming ISCM are to avoid prohibited practices in any transaction (*mu'āmalah*). This means to avoid investing time, money and skill in *harām* undertakings, which can involve: –

1. *gharar* (severe risk/uncertainty);
2. *riba* (excess);
3. *maiser* (speculation); and
4. unjustly becoming enriched (Dewar, 2011).

Gharar literally means risk (Lambak, 2013). *Gharar* can transpire as a result of high risk (Hussein & Pasha, 2011), uncertainty (Razali, 2012), ambiguity, ignorance,

and uncontrollable risk (*gharar fāhish*) (Laldin *et al.,* 2019). *Gharar* is important because it prohibits parties from engaging in LSCPs where the outcome and yield are hidden and uncertain. Thus, *gharar* is based on mutuality and certainty (*Qur'ān,* 4:29).

Riba is a significant prohibition under ISCM due to its strictness on practices relating to increasing money disproportionately. It stems from *raba,* which means to inflate/expand/grow (Aziz & Fatima, 2012). *Figure 4* further explains *riba*, which can transpire under multiple scenarios.

TYPE OF *RIBA*	ENGLISH MEANING	EXPLANATION
Riba al-Duyūn ***Riba al- Naseeyah***	Inflation on loans.	Transpires where a premium on the principal is put by the lender based on the passage of time.
Riba al-Qard	Increment on borrowing.	Transpires where an increment is conditionally put above the principal amount of money lent.
Riba al-Buyū' ***Riba al-Fadl***	Excessive compensation from exchange transactions.	Transpires where commodities are not exchanged in equal counter value.

Figure 4: adapted from Laldin et al. (2019) and Dewar (2011).

Maiser emerges where a party accepts risk that is avoidable by everyone in view of making profit. It is pinned upon taking contractual risk that can be avoided by taking the necessary due diligence (Laldin *et al.,* 2019). *Maiser's* prohibition stems from the enmity that can emerge between contracting parties as a result of deception, expectation and uncertainty (*Qur'ān,* 5:90).

The *Shariah*-compliant finance principles pertained under ISCM were harmonised as core basis of the modern Islamic financing system that emerged in the nineteen-sixties (Al-Ali, 2019). Islamic finance found permanent institutionalisation under Dubai Islamic Bank in the seventies (Abdel-Mohsin, 2005). It then emerged as a renowned system due to its focus on financial certainty. Despite being a juvenile system, Islamic finance traces its philosophical roots back to the *Qur'ān*. Thus, the modern mechanisms used by Muslims to contract, finance, procure and construct projects are quite different to what would have taken place a century or two ago; even though the principles stem from the same unchanged *Qur'ān.*

One perplexing problem with ISCM is whether its positive impact in the food industry can be replicated in the UKCI.[4] The academic literature seems to insinuate that ISCM remains in its nascent stages (Kamali, 2010). Lee, Hwang and Kim (2019) are critics of ISCM (in a food industry context), in which they argue that ISCM's *halāl* integrity is subjective and cannot be scientifically proven. Imposing moral codes that could be too strict for the UKCI can undermine the use of ISCM to enshrine positive attitudes (Tieman 2011; Demirci, Soon, & Wallace, 2016). Thus, it is important to contractually uphold ISCM's moral basis.

Contractual principles upon which ISCM is carried out

There are different types of Islamic contracts. The types relevant to this dissertation are: *uqūd al-mu'āwadāt* (contracts of exchange); *uqūd al-shirkah* (contracts of partnership); *uqūd al-ijārah* (contracts of lease); and *uqūd al-ju'alah* (contract of reward) (Laldin *et al.,* 2019). A comparison of an ISCM and English law contract's standard features and permissible engagements can be seen in *Appendix 3*. ISCM's contractual principles are all hinged upon contractual clarity, the parties' honesty, cost certainty, collaboration, incentivisation, and equal/equitable apportionment of power, profits and losses.

The first contract is *Istisnā',* which means assembly, manufacturing, or building. It is a *Shariah*-based contract of exchange mainly used between the contractor and SCAs. It involves the design, manufacturing, construction, assembling and/or packaging of a product or work package. The contract must specify clear specifications, a fixed completion date and a pre-agreed price (Khairuddin *et al.,* 2019).

Istijrār means to wrench. It is also a contract of exchange mainly used amongst SCAs and between the client/contractor and SCAs. It involves the client/contractor contracting a supplier to supply an item on a rolling basis until termination. The payment must be pre-agreed and can be paid on rolling basis. The purpose of termination must be clear and pre-defined.

[4] Key benefits of ISCM in the food industry are the quality assurance and moral duty it imposes upon the supply chain to deliver *halāl* food from farm to fork.

The last contract of exchange covered in this dissertation is *murābaha*. *Murābaha's* meaning connotes profit. It is used amongst SCAs and between the LSCP's parties. The contract entails the sale of an item at its cost price plus a declared profit. Such declared profit can be exact or can be in proportion of the item's cost price.

The unique feature of these contracts is their emphasis on equal bargaining power. They leave little room for disproportionate power amongst the parties, which is something unusual in the UKCI. The key structure of such contract is to have a specified item to acquire, and a non-manipulatable monetary mean to acquire it.

Mudārabah connotes profit and loss sharing and is a contract of partnership. It can be used between any SCAs, PPs and financiers where one party has less financial power. It involves one party acting as the financier and the other acting as the manager of the financier's investment. The financier bears the financial loss and the manager loses its work's income if the *mudārabah* fails. If it succeeds, the parties share the profit based on a pre-agreed apportionment.

Mushārakah means partnership and is also a contract of partnership. It can be used between any party under ISCM. It entails two parties investing into a project based on pre-agreed portions. Each party makes a profit and faces a loss proportional to the investment made. These contracts of partnership are paramount where parties want to reduce monopolistic practices and asymmetric power.

Ju'alah which connotes commission, is a contract of reward. It can be used by any party, but mainly the client and contractor in order to incentivise each other or the supply chain. It involves a unilateral legal undertaking (promise) where a reward is granted in return of accomplishing a task.

Lastly, *ijārah* means leasing. It is a contract of lease aimed towards the utilisation of usufruct (Khairuddin *et al.,* 2019). *Ijārah* involves one party leasing an item or asset for a pre-agreed period and fee. It can be used by the contractor in the front-end as a mean to quickly levy resources to carry out work.

Having presented the literature review, one may ask what ISCM really is. ISCM is pertaining core moral Islamic principles and financial techniques, within the cyclical management process of a network of firms, interconnectedly undertaking work to produce the end-customer's demanded product. ISCM's fitting in the UKCI would be alongside the contemporary viewpoint on SCM illustrated in *Appendix 1*.

3.BENEFITS OF ISCM

A prime and prominent benefit of ISCM, is its emphasis on certainty, collaboration, and alignment of objectives in proportion to the LSCP's requirements and supply chain at hand (Hassan *et al*., 2016). ISCM allows no place for unequal power, profit-loss sharing and adversarial stances by virtue of implementing strict performance codes. Such codes lay the key factor of whether a supply chain is performing in compliance with ISCM (Zainuddin, *et al.,* 2020); thus, keeping supply chain processes intact (Tieman, 2011; 2012). Henceforth, Chapter 3 will further explain ISCM and analyse its benefits.

Permissible project financing loans

A huge myth when looking at ISCM is that it prohibits a person from making a profit over money it lends or finances. The prohibition of *riba,* as explained on page 17, transpires upon intentionally making unjustifiable profits from lending/financing a party. The key driver under an ISCM compliant venture is the good faith and intention from, which the parties agree. Under such contractual arrangement, not only can PPs and SCAs enjoy the practical benefits of ISCM; but they along project financiers, can collectively make monetary profit without being *Shariah* non-compliant. A prime method that facilitates such benefit is the *murābaha* (Dewar, 2011).

Murābaha is paramount where the LSCP's client wants to retain ownership of the delivered building but currently lacks funds to build it. The *murābaha* would involve the financier purchasing certain assets of the LSCP, including the supply chain of the front-end, or even the LSCP's value in its actual completion form. Upon completion, the client would then purchase the asset on a deferred payment basis. The purchase price would be the asset's original value, plus a pre-agreed margin with the project financier.

If the asset is the LSCP itself, the cost-plus pre-agreed margin must have been made at no stage earlier than, or later than the front-end of the LSCP. The reason for that is in order to compel the client and the relevant parties to take best endeavours in defining the LSCP. The time at which the financier enters the LSCP's lifecycle should be where the LSCP's social/overall output is not uncertain enough to amount

as a gamble; but also, not too certain to steer such financier's investment decision to be based on a one-sided profitable venture.

By undertaking such financial arrangement, the profit-margin that the financier will yield is genuine and *halāl* profit. The profit does not amount to being one of interest and *riba* because the financier would own the LSCP and the real substantial risk associated with its ownership before selling it back to the client. However, such arrangement carries controversy associated with subjectivity, which will be discussed in Chapter 5.

Supply chain collaboration

ISCM heavily focuses on collaboration in the supply chain and enables using Islamic financing techniques to promote such collaboration. *Ijārah* allows PPs and SCAs to cement the supply chain and incentivise it to deliver its role in the front-end. The *ijārah* would usually entail a financier purchasing an asset within the supply chain from a tiered supplier, and then transferring it to the contractor or the relevant PP/SCA (Dewar, 2011).

A key benefit of *ijārah* in the front-end is that it requires the asset or service provided by the SCA to be precisely defined and studied. This promotes the proactive review of the supply chain's tiers, through ISCM risk assessment tools such as *gharar* identification to unveil hidden fragmentations. Concurrently, the parties can use *ju'alah* to incentivise SCAs towards collaboratively fixing such fragmentations. It also indirectly allows the contractor and client to impose the integral morals enshrined under ISCM on SCAs as part of any incentivisation and commissioning process. Henceforth, all SCAs in the supply chain would be equitably treated based on merits.

An *ijārah* can be executed in numerous ways that carry different benefits. One common way entails the financier purchasing the asset or work package from a particular SCA/PP such as the client, and then appoint a contractor (that can be external to the main contractor) as its agent. Under such arrangement, clients that are facing financial problems, but want the LSCP to carry on, can be saved by the financier. The client will then have the chance to rebuy its asset when it can do so or can contract the financier towards an alternative solution.

Particularly in the front-end of LSCPs, *ijārah wa iqtinā'a* is probably the most useful variant of an *ijārah.* Here, an asset such as the LSCP's land is purchased by a financier, such as an Islamic bank, from the client. It will then be operated by the financier and will only be leased back to the client when such asset begins to yield a pre-agreed economic value. This allows pressure and risks too big for the client in the LSCP's front-end to be alleviated in order to allow it to focus on the supply chain and properly defining the front-end.

Istisnā' is also another technique under ISCM. It is useful when a particular construction and procurement task of the LSCP needs to be facilitated. *Istisnā'* entails a financier procuring an asset or party, such as an architect that would be needed to sufficiently deliver the front-end. This occurs where the contractor, client or any SCA are unable to procure such asset. Specific real-life examples of such assets in the front-end's context include complex designs for the LSCP's front-end, BIM software/documents, and traceability systems. Thus, *istisnā'* allows parties to rely upon financiers to alleviate problems that nobody from within the LSCP can.

Supply chain and LSCP risk sharing

ISCM promotes efficiency by default. It mandates that a *halāl* supply chain must be resourcefully efficient (Zainuddin, *et al*. 2020). Efficiency from a core Islamic, ISCM and SCM lens is the measure of the supply chain management's cost (Tieman, 2011) in relation to how well resourceful expenditure is utilised (Fugate *et al.,* 2010).

Where two SCAs/PPs (*i.e.*: contractor and client) are conjointly expending money on the same asset in the supply chain, a *mushārakah* can carry substantial benefits to them. A *mushārakah* generally entails partnering under a partnership agreement whereby profits are shared under a mutually agreed apportionment. Where losses accrue, the *mushārakah* would apportion such losses in proportion to the investment of each partner (Khairuddin *et al.*, 2019).

A key contribution that ISCM can bring to the supply chain via a *mushārakah* is a variant arrangement called *mushārakah muntahiyah bit-tamlīk* (diminishing partnership). This arrangement allows one of the partnering SCAs (*i.e.* the contractor) to initially purchase supply units from the other SCA (*i.e.* second tier supplier) at a pre-agreed unit price. The profit or loss accrued would be separated from the initial surplus gained from purchasing the pre-agreed supply units. Thus, SCAs can benefit from

equitably setting, sharing and guaranteeing a transactional profit without doing so at the expense of the mid-tier supplier's profit margin (*i.e.* tier one supplier).

Liquidated damages

ISCM mandates parties carrying out a LSCP to continuously ensure *Shariah*-compliant practices are retained. This is known as *halāl* integrity verification, which aims to ensure that no party is purposefully disadvantaging another party for individual gains. This influences how LAD-clauses are set under an Islamic arrangement. A LAD is a contractual provision expressly stipulating an agreed, pre-defined sum of money, which signifies a genuine pre-estimate of possible loss/damage that is to be paid by the party breaching the contract to the damaged party (Bailey, 2016).

The mechanism of how LAD-clauses are set and triggered can range under different ISCM contracts. For that, the prime focus will be on *istisnā',* a very commonly used contract in procurement. The principle of LADs is permissible under ISCM subject to certain requirements (Khairuddin *et al.,* 2019). Before the LSCP-contract, a pre-contractual agreement between the parties must be made, designating all LADs and payable sums that will take effect upon commencing the project. Concurrently, the main LSCP-contract must specify the payable sums under a clause, which refers to the initial pre-contractual LADs agreement (Al-Amine, 2001; Qal'ahji, 2005).

In English law terms, there must be a pre-existing covenant, warranty or undertaking to the construction contract. Any LAD-clauses and sums must be pre-agreed prior to the commencement of the LSCP. The sum must be reasonable and non-extravagant, which is very similar to the approach under English law. The LAD-clause must also take account into neutral events. A neutral event, is synonymous with the Islamic concept of *al-jā'iha.* Under ISCM, neutral events can be negotiated and incorporated under the contract. However, they must be exceptional, unforeseeable, and beyond the parties' control (Rayner, 1991).

To exemplify how that would work in real life, if the contractor does not complete the LSCP by the contracted completion date stipulated in the contract, it would receive a *Shariah*-compliant non-completion certificate that then allows monies to be deducted. The deduction can only be the exact value agreed in the LSCP's outset. This will not be plausible in light of a neutral event, and henceforth, the conventional estimation of an EOT would be undertaken to compensate for such neutral event.

Delay handling

Under a standard English construction contract, there are standard clauses dealing with managing risks and handling delay after a delay occurs. The main issue under most English construction contracts is that PPs have unrealistic expectations with regard to such contracts being apt for handling all types of risks and delays (Burr, 2013). Conventionally, when delays transpire, they are handled by: –

1. identifying the risk;
2. considering how to reduce such risk's re-occurrence;
3. acting towards reducing the risk's consequential impact;
4. forecasting the risk's future impact if left unhandled; and
5. the consequential impact of mitigatory actions.

This is unrealistic under ISCM, which not only requires pre-allocation and assessment of risks (as will be seen in Chapter 4), but also mandates accommodating time for delays pre-emptively in light of the permissible risks identified (*i.e. mukhātarah*). Such accommodation must be in context of the LSCP at hand and not a standard pre-set mechanism, which is often the case with standard English construction contracts.

Dispute resolution

Parties privy to an Islamic arrangement must have clearly defined ADRMs. This goes in hand with ISCM's focus on maintaining good behaviour, positive attitudes and sisterly/brotherly stances (Yousef, 2010). Resolving disputes follows the same robustness standard, that is expected from, and used to measure, a supply chain's *Shariah*-compliant performance.

ISCM can reduce adverse attitudes and can push PPs towards adopting a collaborative and mutually incentivised approach. This is further emphasised upon by Islam's general moral principle of sisterhood/brotherhood. Such principle's brotherly approach applies by default amongst those who co-engage in a *Shariah*-compliant undertaking and is inclusive to non-Muslims (Khairuddin, *et al.* 2019).

Under NEC3/4, a commonly used building contract in the UK, ADRMs such as arbitration and litigation are only available once a statutory/contractual adjudication has taken place. Adjudication also requires disputes to have crystallised following a

claim being made, which also takes time. Yet, the parties are always free to negotiate and mediate prior to the aforementioned ADRMs.

Under ISCM contracts, negotiation, mediation and any resolution endeavours are all morally mandatory upon the parties. This is irrespective of whether such ADRMs are stipulated in the contract or not. The duty of brotherhood derives from the *Qur'ān*, which states: "*the believers are but brothers, so make settlement between your brothers. And fear Allah that you may receive mercy*" (*Qur'ān,* 49:10, p. 516). Once any attempts of reconciliation fail, the parties may then approach their NEC3/4 contract in an identical manner to that of a typical party in the UKCI.

However, there is a recurring moral duty upon *Shariah*-compliant parties to always seek for a sister/brotherly resolution. This is even if the parties had previously tried and failed. This fits in as part of the overall framework of ISCM's contractual-moral framework in creating fair and equitable contracts. If such undertakings are not done, the cost to undo bad decisions previously made will be disproportionately expensive later on in projects.

Chapter 3 had presented the fundamental benefits of ISCM across various levels of the LSCP. Chapter 4 will look into the front-end of LSCPs and show ISCM's contribution to it. Chapter 4 will then focus on how ISCM's moral and contractual implications would have impacted the HPP case study.

4.APPLYING ISCM TO THE FRONT-END

The front-end and using ISCM to manage risk within it

The front-end exists under the green-shaded area of the project lifecycle model seen in *Figure 5*. The front-end has been defined as the preliminary fuzzy phase of the project where uncertainty is high (Smith & Reinersten, 1991; Smith, 2000). Such phase is high in risk, which makes it an easy ground for speculative and prohibited practices to take place. Moreover, the front-end also aims towards enabling the LSCP to be carried out on time, within budget, and according to scope (Morris, 2014). Yet, this is not the reality in most LSCPs (PwC, 2005).

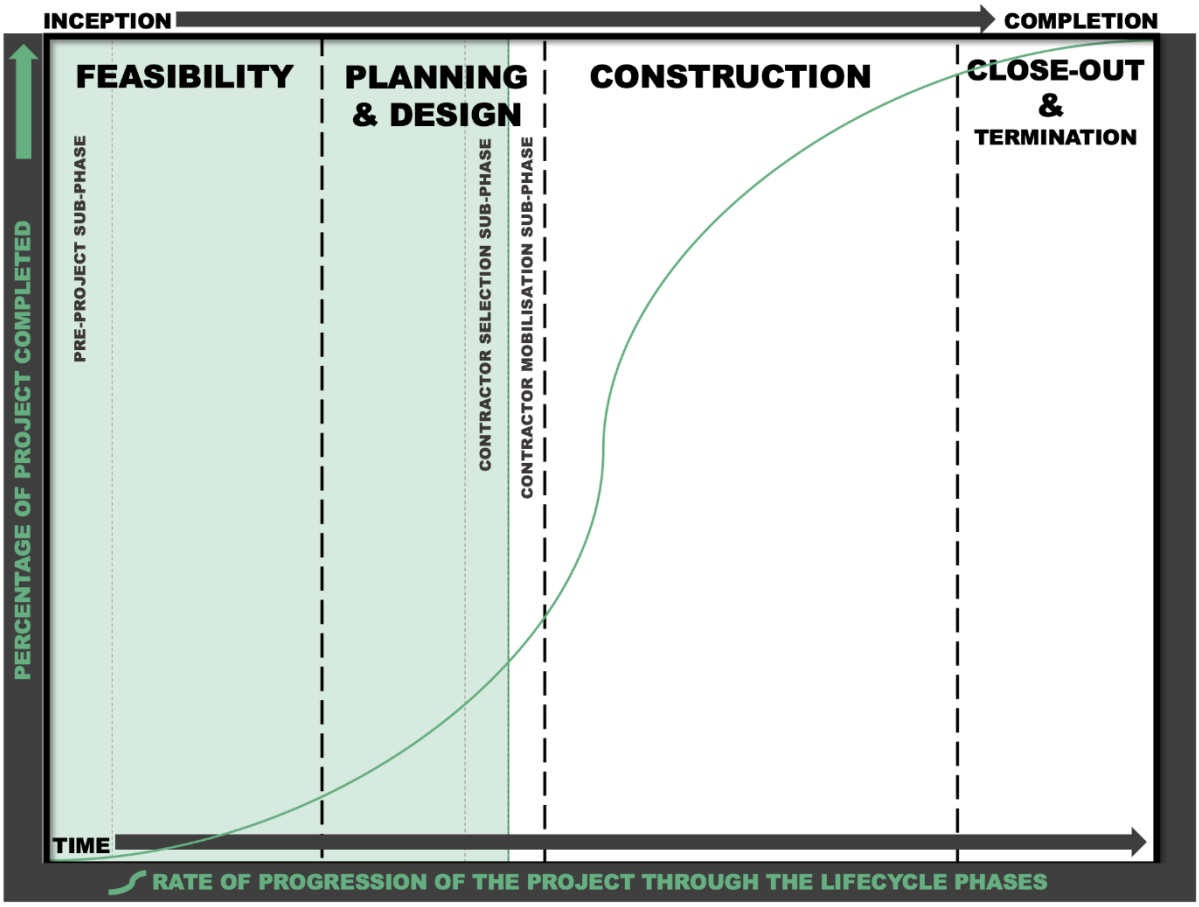

Figure 5: adapted from Bennett (2003) & Morris (1988).

The front-end involves a set of vital preliminary tasks to improve chances of succeeding in delivering the project (Kim & Wilemon, 2002). Such tasks are targeted towards achieving strategic planning in order to execute the project's construction at a rate akin to the green line in *Figure 5* (Cleland & Ireland, 2002). Strategic planning entails the development of a compatible concept, design and procurement route, in

order to maximise information, minimise risk and reduce uncertainty (Lucae *et al.,* 2014; Gassmann & Schweitzer, 2014; Merrow, 2011).

Important risks associated with the front-end include appraising the project's value, selecting an appropriate procurement route, in addition to: –

- schedule overflow;
- cost-allowance;
- legal construction;
- SCM; and
- the LSCP not achieving the required socio-economic impact (Akintoye & Hardcastle, 2003; Mead, 2007).

These can later on, result in cost/schedule overruns and in the client not yielding the anticipated return on investment (Lehtiranta, 2014; Taroun, 2014). Such risks can emanate from various sources, of which one could be the client reneging on commitments (Dunović *et al.,* 2015).

Not all risks are fully predictable, yet efficient risk management can mitigate a fatal aftermath (PMI, 2017). ISCM aids the risk management process on a project planning level through its strict moral emphasis on clarity. ISCM first defines two categories of risk: *gharar* which is a forbidden risk, and *mukhātarah,* which is an unavoidable yet nondetrimental everyday risk faced in normal practice (Kozarevicet *et al.*, 2013). *Gharar* that exists in any level of the supply chain can render the contractual arrangement of that level void. However, *mukhātarah* does not deem a contract void.

To identify *gharar* as part of ISCM's risk assessment process in the planning phase*,* PPs have to carry out risk measurements to see whether the risk is a *mukhātarah*. PPs will gauge the size/impact of the risk at hand on project stakeholders, and whether such risk is naturally inherent, or a result of the parties' doing. Also, the parties must satisfy that such risk is not fatal. At that stage, the risk is a *mukhātarah* (Swartz, 2013). This means that the parties must equally bear or equitably pre-agree over the risk's apportionment of potential profit/loss.

A timeframe must then be definable for such risk's presence. If the risk is a recurrent one, the parties must facilitate additional time upfront to accommodate such

risk. Where there is a force majeure,[5] the parties are morally obliged to rescind the contract if:

- unforeseen fundamental changes occur;
- the contract has resultingly become onerous on the obliging party; and
- there is a requisite duty to impose a just and reasonable solution (Rayner, 1991).

As will be seen in *Figure 9*, *halāl* integrity verification is a process used to manage risks such a *mukhātarah* with a view of effective risk management. By doing that, ISCM can secure a safer LSCP from within the supply chain by lowering costs and identifying the timely manner by which tasks are to be foretaken (Greiman, 2013). As seen in the food industry, ISCM if applied correctly, can be used to control against loss and to yield greater rewards (Dey, 2012; Zainuddin *et al.,* 2020).

A critical point as to why ISCM is capable of managing risks more effectively is due to its contractual bolstering of good behaviour. This compels PPs to respect the universal moral values of the *Shariah,* not the *Shariah* itself. ISCM's moral requirement of early risk assessment determines whether the LSCP should be developed to the end of the front-end or abandoned (Ali *et al*. 2017; Haleem & Khan 2017). Otherwise, as per the *Qur'ān* (2:219), the parties' carrying out of a flawed undertaking is forbidden.

ISCM's integral rigour in validating information to eliminate inadequate planning can help the UKCI. It can compel PPs to refrain from approaching projects based on a limited time, cost, and quality, perspective without accounting for the external environment (Levine, 2005).

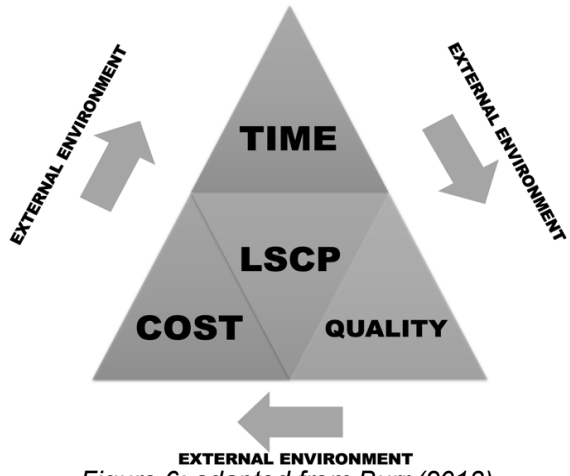

Figure 6: adapted from Burr (2013).

[5] *Quwa Qāhira* (force majeure) is any "Act of God" or unforeseen conditions that must satisfy the three principles of '*uther* listed above. It is not *gharar* or *mukhātarah*.

Figure 6 shows how PPs often base the LSCP around time, cost, and quality without accounting for the external environment highlighted by the three arrows.

ISCM would place risk at the centre of *Figure 6 and* would then focus on the socio-economic and wider impacts of the LSCP (Khan *et al.,* 2019). Thus, ISCM hails front-end definition on the various grounds discussed. Afterall, aiding the front-end's definition is a welcomed practice by various prominent authors such as Maylor (2001) and Morris *et al.* (2000).

ISCM's contribution to the front-end

ISCM's alignment with the front-end contravenes the traditional execution-oriented approach in project management theory. Such approach has disregarded safeguarding a clearly defined project front-end (Edkins *et al*., 2013; Morris, 2005; Somma, 2008). *Figure 7* illustrates the classic approach to project management that does not incorporate the front-end. By adding a wider dark arrow in *Figure 8,* which includes the front-end and further factors, decisions regarding the LSCP become more contextual, which improves project delivery.

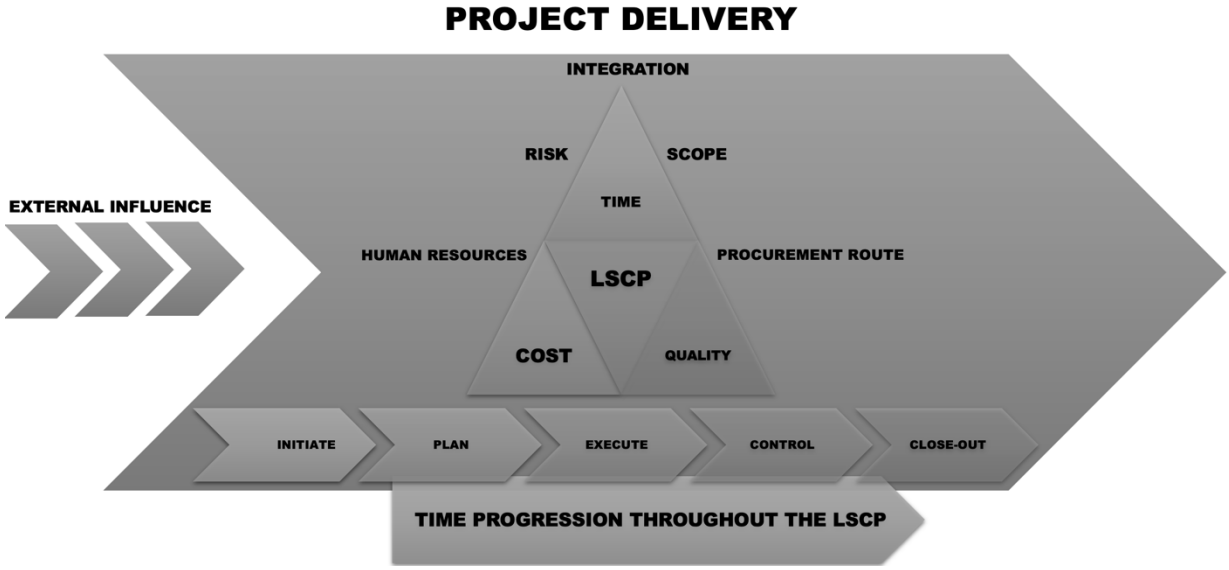

Figure 7: *adapted from Morris (2013); Morris & Pinto (2004).*

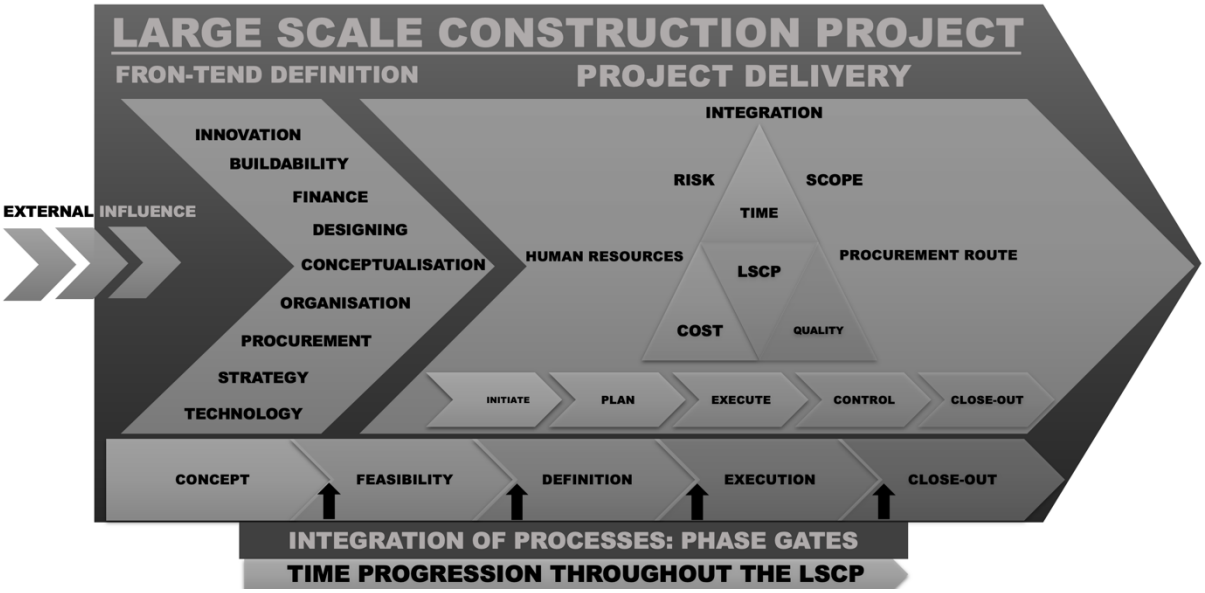

Figure 8: *adapted from Morris (2013); Morris & Pinto (2004).*

Additionally, by placing the dark arrow, Morris (2013) enables a clearer conceptualisation of key milestones (*black arrows*). Those junctures are known as stage-gates, where stage-gate reviews and decisions are made to proceed with the LSCP without leaving fragmentations behind (Grönlund *et al*., 2010). However, the model above does not enable the continuous mitigation of risk between key milestones. This is where *halāl* integrity verification becomes a viable contribution.

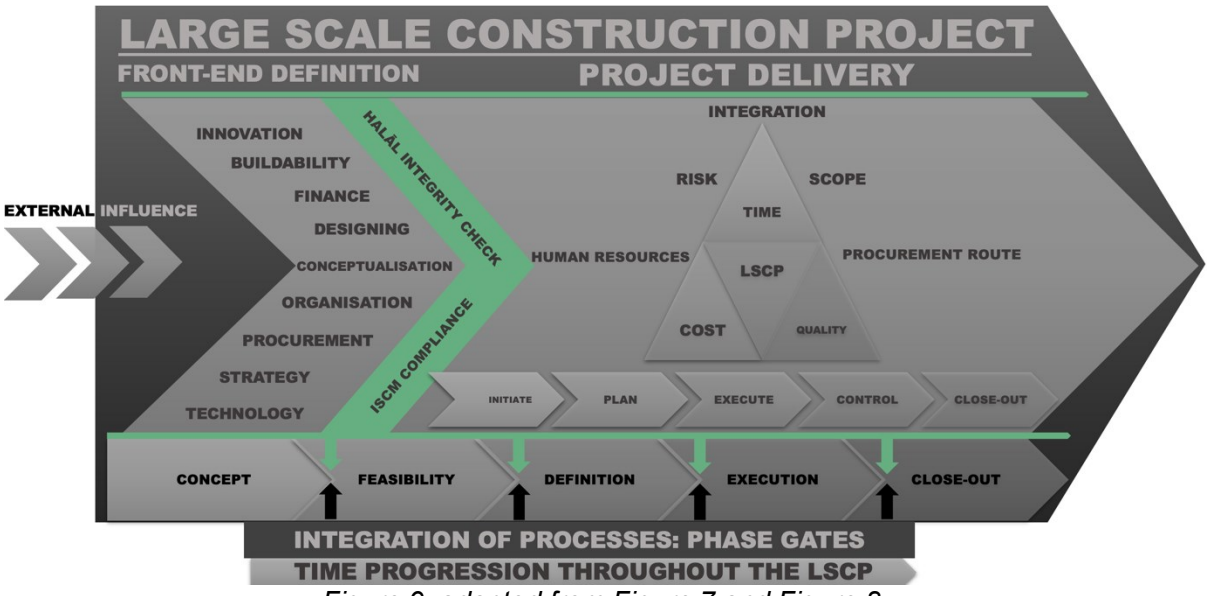

Figure 9: adapted from Figure 7 and Figure 8.

ISCM's *halāl* integrity verification process does enhance the emphasis on stage-gates. The moral implication of *halāl* integrity verification compels parties to stick to plan, be on time, and maintain good personal behaviour. What makes *halāl* integrity verification a very unique tool of ISCM is its recurring review of contractual and moral

compliance. For example, even where the LSCP has passed the *green compliance arrow* in the *Concept* stage under *Figure 9*, it will still be subject for review when the project reaches the next phase.

Lastly, before applying ISCM on HPP, *Figure 10* combines *Figures 5* and *9* to show ISCM's contribution to the front-end and key project processes. The *Dark Chain* indicates such processes and their currency in regard to the *Stage-Gates*, *Halāl Checks*, and the progression towards completing the project.

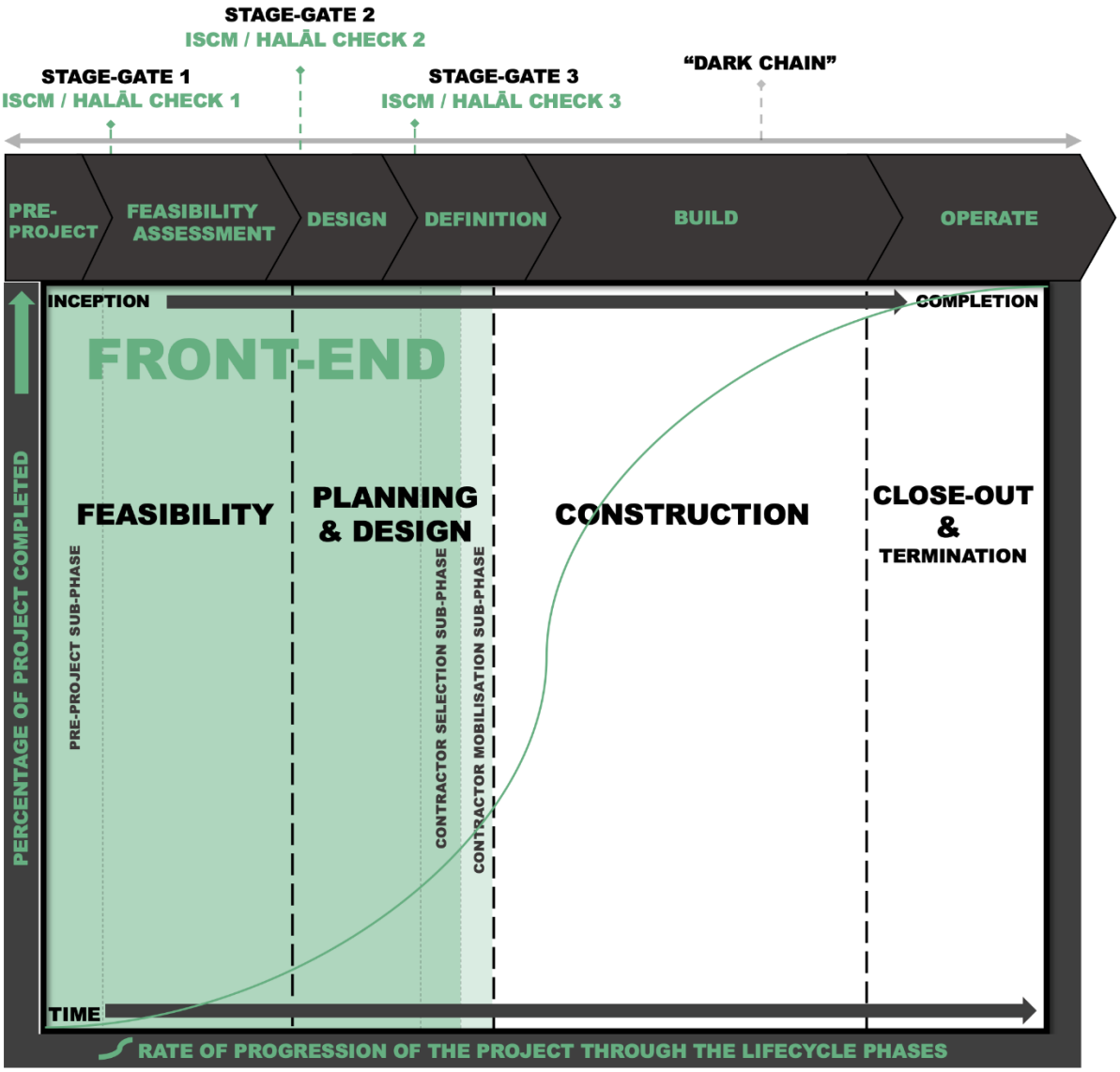

Figure 10: adapted from Figure 4 – 9, Bennett (2003); Morris (2014).

Accordingly, ISCM's implementation of adequate definition, certainty and risk prevention, are key benefits it can bring to the planning of LSCPs. ISCM is a supplementary tool that can aid in increasing a LSCP's chance of succeeding or can apply risk management to deem a LSCP *harām* before ever setting foot on-site. All these could help to pre-emptively avert future cost-overruns and other derelictions.

Applying ISCM to Holyrood

HPP remains a great example of what could fatally go wrong when a project is initiated without properly defining the front-end. The table below briefly introduces relevant information concerning HPP: –

Project size (land)	≈ 15,000 – 20,000 m^2.
Overall delay size	≈ 3 years late (Burr, 2016).
Longest delay	≈ 20 months (Audit Scotland, 2004).
Planned cost	≈ £10m – £40m (UK Gov, 1997).
Actual cost	≈ £430.6m (Audit Scotland, 2004).
Cost overrun	≈ 10 times the planned cost (Fraser, 2004).
Key risk factors	Conflict between quality and cost; no design/planning clarity and consistency; and lack of risk and procurement route assessment (Fraser, 2004).

Figure 11: author's own.

Various reports such as the Holyrood Enquiry, by Lord Fraser (2004), and the Auditor General for Scotland (2004) have deeply analysed what went wrong in HPP. The paramount conclusion reached was that the selection of a suitable procurement route, which was construction management, was "*one of the most significant, if not the most significant*" decisions to be taken by the client during the project's initial stages (Fraser, 2004, p. 78). In HPP, the procurement route, risks assessment and front-end were not even satisfactorily considered. The following illustration shows a typical construction management arrangement and its complexities: –

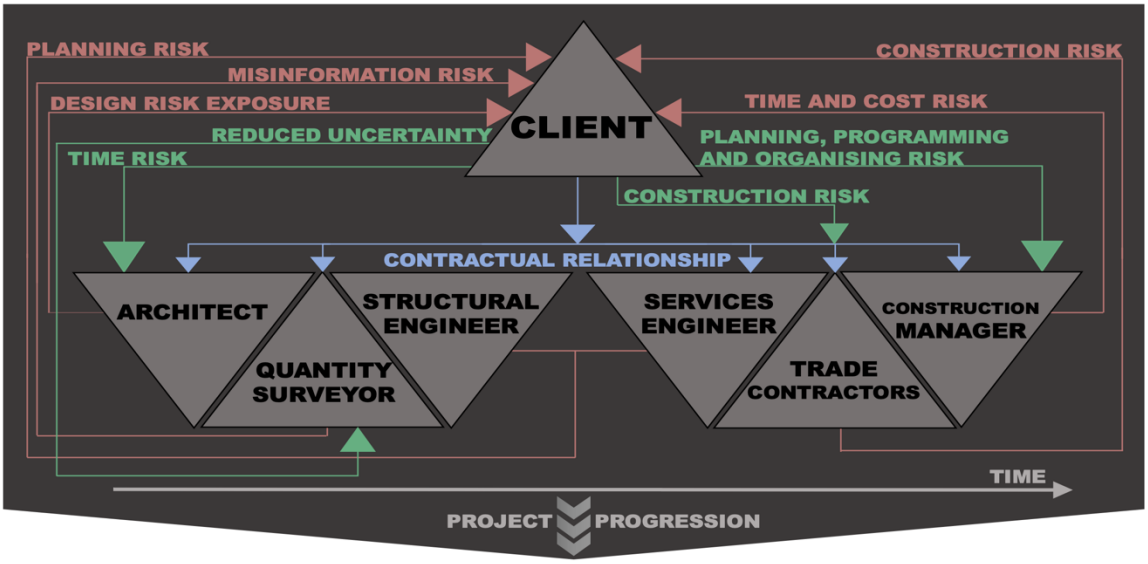

Figure 12: author's own.

In HPP, such procurement route would have required extensive project definition to work well. A big issue in the UKCI is the lack of attention given to the front-end tasks of projects. In G*reat Eastern Hotel v John Laing Construction* ([2005] EWHC 181 TCC), the High Court judge Wilcox J, controversially stated that construction management's key advantage to the client, is its ability to allow the project to begin before completing a fully defined and wholesome design (Wilcox J, 2005, para. 20).

As already explicated in Chapter 2, ISCM opposes Wilcox J's description and deems any venture that is incomplete and non-wholesome unlawful (*Qur'ān,* 2:168). Moreover, ISCM would have not allowed a LSCP to initiate with the red risk arrows in *Figure 12* being unresolved or equally shared. If such risks cannot be resolved, the entire procurement route would fail, and another procurement route would be required.

To understand the implication of the risk exposure dealt with in HPP, *Appendix 4* illustrates how the key trade contracts in HPP were priced. *Figure 13* highlights on the impact of such risk exposure throughout HPP's lifecycle: –

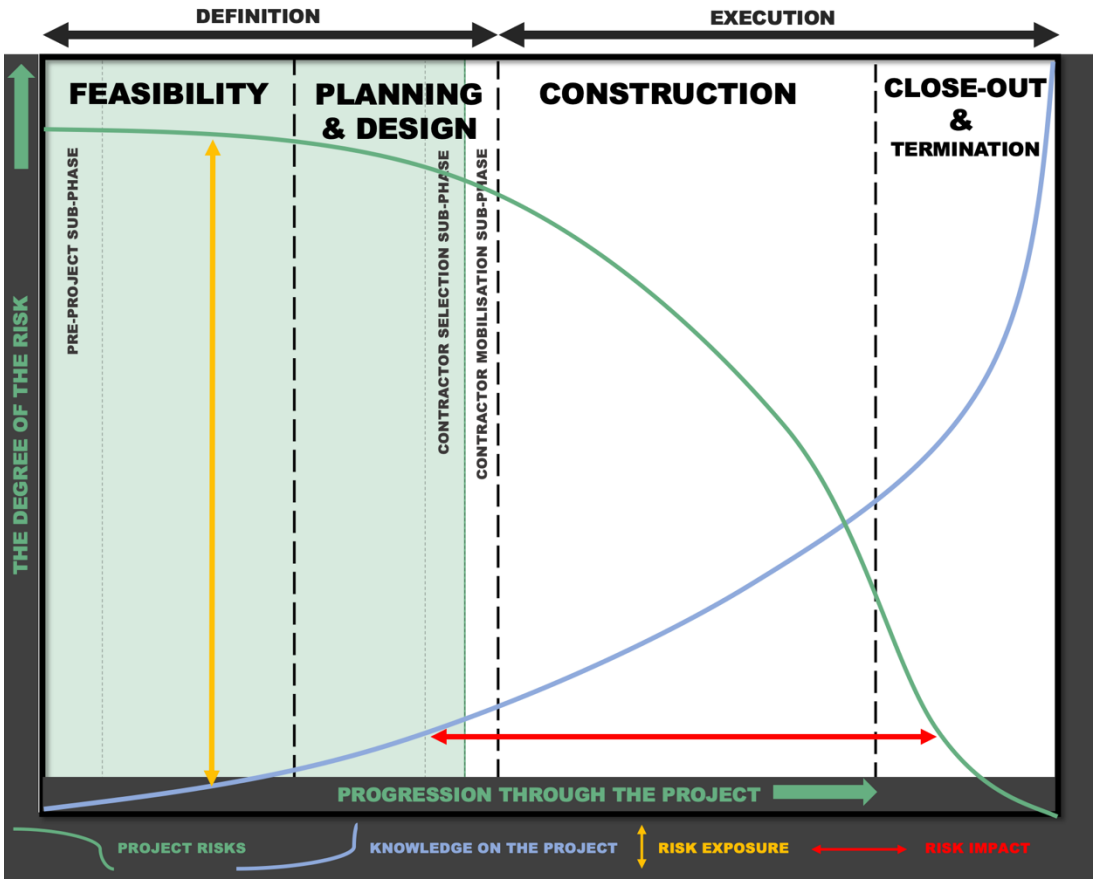

Figure 13: Adapted from Solomon (2006) and Wideman (1992).

Thus, *Figure 13* re-emphasises that if the front-end is not properly sorted, the project will potentially have problems moving forward. What ISCM offers is a way to

contractualise sorting the front-end and dealing with such problems in an effective way.

In July 1998, two architect design firms won the contract for designing Holyrood Parliament. The initial cost estimation was £62.6mn. Yet, the project-budget set by the client was £50mn, despite being aware that the majority of bids presented exceeded that number. Thus, the client had already thwarted the supply chain by not allocating necessary funds, before the contractor ever set foot on site. Under ISCM, this would be forbidden, and no SCA would be permitted to agree to the client's budgeting. As ISCM stands, there is no room for such poor behaviour concerning cost certainty.

When planning and designing, the client should use ISCM as a tool to reinforce the need to properly carry out quantity surveying and early land surveying. This would pave way for accurate budgeting of the project and provide the nominated designers with a well-rounded starting point to prepare a viable design and pricing. ISCM's emphasis on resourcefulness would also compel the client in the design stage to ensure that it had taken best endeavours in aiding, and not obstructing, the design's creation. That would have entailed providing a reasonable and well-estimated budget.

Upon reaching March 1998, a timeline for HPP was created, whereby the start date of construction was in July 1999, and the completion date was in autumn 2001. Other than not having a clear completion date to plan upon, the programme was devised, despite evident tensions and communication problems between the two architects, and the project manager's resignation in December 1998. The client's emphasis on speed, led to adopting a procurement route at the expense of quality and cost. The PPs were all aware of the risk of price uncertainty present until the last contract was awarded (Audit Scotland, 2004). Yet, no one acted upon alleviating such risks.

To make matters worse, the client did not prepare a viable and complete procurement route strategy document (White & Sidhu, 2005). By March 1999, HPP's client's design had a risk exposure of 100%, akin to the vertical yellow line in *Figure 13* (McAndie, 1999). In July later that year, the contractor was handed the site from the client, despite the design's risk exposure remaining unreduced. Thus, HPP began with a programme lacking sufficient incorporation for the planning and design phases (Fraser, 2004).

Had ISCM been adopted in HPP, the entire undertakings of the client, architects and project manager would have been disallowed and deemed *harām*. The accepted uncertainty by choosing construction management, in light of the early events in HPP, would have constituted *gharar-fāhish* (excessive *gharar*) on every level. *Figure 14* outlines how excessive *gharar* would have transpired and its correspondence in HPP:

EXCESSIVE *GHARAR* (Laldin *et al.*, 2019)	**OCCURRENCE IN HPP** (Fraser, 2004; Audit Scotland, 2004)
Accepting uncertainty that affects the subject matter's core.	Price uncertainty caused initially by the client's budgeting of £50m affected all of HPP.
Selling an item that is uncertain in terms of its deliverability.	Trade contracts were tendered despite the uncertainty of their deliverability caused by incomplete designs and poor definition.
Having inadequate information on: – quantity; delivery time; delivery methods; price; and payment methods.	Although the quantity surveyors adequately surveyed HPP, pricing and planning were highly inadequate and inconsiderate of risk due to the lack of willingness of MPs to uptake risk.
Unnecessary complexity of the contract.	Client incorporated minimal time risk profiles for each trade contractor under the contract, making future delay handling very difficult.

Figure 14: author's own.

Initially, ISCM would have deemed handing an incomplete and uncertain design *harām* due to the constitution of *gharar*. ISCM would have saved both time and cost, given that the problems above would have been pre-emptively avoided. Secondly, the architects would have been unable to resign in such unprofessional manner because the result of that would be *Shariah*-noncompliance. Instead, ISCM would have forced a negotiation and a mediation.

Thirdly, *halāl* integrity checks would have not allowed HPP to proceed with the risks it had carried. Lastly, the client, trade contractors and architects/designers would have been obliged to appropriately apportion risk as seen below: –

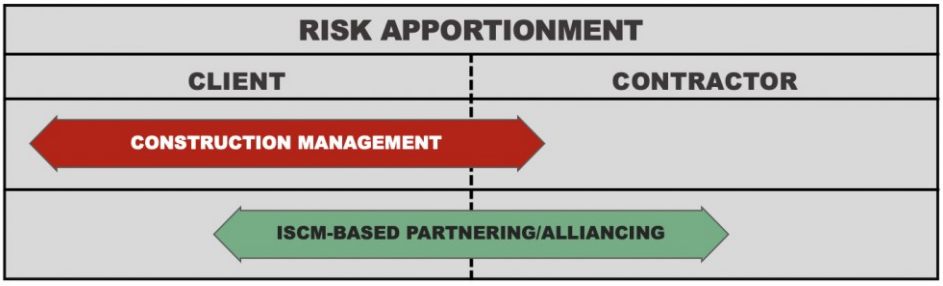

Figure 15: author's own.

Although construction management is risky for the client, the trade contractors and project manager were also very constrained in HPP. This was due to the numerous variations and poor budgeting that took place.

Thus, ISCM is unlikely to accommodate procurement routes where risk is not reasonably shared. Had ISCM been present during HPP, a collaborative approach would have most likely prevailed. This means alliancing, partnering, and even traditional contracting, with a good risk profile and experienced PPs, would have sufficed.

A lot of the excessive risks that were discussed in this Chapter could have been alleviated from the client's remit. Additionally, the waste of funds and misuse of resources, could have also been prevented by properly planning. On a relational end, the parties would have been incentivised through *ju'alahs* to avoid the adversarial stances that were present.

Contractually, ISCM would have likely steered the parties towards a master *mushārakah* contract. An *istisnā'* off-site manufacturing subcontract could have been used to prefabricate and standardise key building components, as stipulated in the Holyrood Inquiry (Fraser, 2005, p. 55). The supply chain could have been directed via *istijrār* and *ju'alah* subcontracts, in order to have an unbroken and incentivised supply chain.

Overall, Holyrood's front-end was not properly sorted, which resulted in problems that prevented HPP moving forward, making the cost disproportionately expensive. ISCM could have effectively and contractually sorted the front-end, prevented many cost related issues, and dealt with HPP's problems in a collaborative manner. Convincingly, ISCM would have been capable of alleviating the adversarial stances, poor risk management, and project definition of HPP.

All the arguments presented in this Chapter lay reasonable grounds supporting the notion that **ISCM is capable** of alleviating longstanding problems associated with the UKCI. Yet, ISCM does not come short of its limitations. Such limitations will now be laid out and critically analysed.

5.ISCM'S LIMITATIONS AND OVERCOMMING THEM

When looking at ISCM, one cannot overlook the limitations that may come alongside it. Such limitations, if unconsidered, can undermine the contribution of ISCM to the front-end of LSCPs. Moreover, certain limitations are inherently unavoidable, whilst others may be avoided through good practice by PPs and SCAs alike.

A principal and perplexing problem is the uncertainty of whether ISCM's positive contributions in the food industry can be brought into the UKCI. ISCM, if ever used under a construction arrangement, would be a new concept in the UKCI specifically, and construction at large (Kamali, 2010). Afterall, even construction SCM as a whole, is still relatively in its nascent stages too (Aneesa *et al.*, 2015).

Yet, despite this issue, the principles that ISCM is based upon have been practiced for a very long time. For that, Chapter 5 will first lay out ISCM's limitations. Such limitations will also be critically analysed, whereby the Chapter will provide ways to overcome them. By doing that, Chapter 5 will lay out the extent to which ISCM can contribute to the front-end of LSCPs despite its limitations.

Subjectivity and interpretation

Looking back at the *murābaha* form of financing, the timely manner in which such an arrangement must be made, is a matter of high controversy. As explicated in Chapter 3, the time at which a project financier enters the LSCP's lifecycle should be a middle zone. Such zone is when the LSCP's outcome is not uncertain enough to constitute *gharar* or *maisir*; but also, not too certain to have an investment decision being based on a venture where one party only benefits.

Ascertaining such middle zone in order to not contravene the *Shariah* is a very difficult task that can be influenced by culture, the nature of the parties interpreting the contract, and the governing law of the country. The critical issue with the time at which a financier enters the LSCP to contract and execute the *murābaha* is the sheer subjectivity of what constitutes a *Shariah*-compliant timing, in light of the aforementioned factors.

Additionally, different Islamic schools of thought share different stances on the *halāl* integrity process concerning the acquisition and management of a *murābaha*'s asset. One example is the *Shariah*-compliance of '*arbun*. '*Arbun* is a good faith down-

payment where the PP/SCA makes a down payment towards purchasing items at a stipulated strike price within a particular timeframe. When the PP/SCA decides to buy the items, they will pay the remaining balance of the strike price if the items' price is higher than the strike price. On the other hand, where the price is less than the strike price, the PP/SCA can put down the transaction and the supplier will keep the deposit.

This in the eye of some Islamic schools of thought is a permissible means for managing/reducing the risk of price volatility within the supply chain. Additionally, '*arbun* offers a form of purchasing power assurance for SCAs in order to carry on purchasing supplies from their subordinate tiered SCA. Despite such view, many Islamic scholars have held an '*arbun* to be *harām* under Islamic law (Al-Zuhayli, 2003).

The reason '*arbun* can be forbidden as a financial mode of sale is due to its substance of *gharar*. Its speculative nature can also lead to *maisir* and even *qimār.* Additionally, such tool has been used to give an Islamic veil over conventional purchase calls of items (Dewar, 2011). Thus, the subjective nature in verifying the *halāl* integrity of different ISCM-related techniques (*i.e. 'arbun*) is highly based upon opiniated interpretation as opposed to having a scientific code (Lee *et al.,* 2019).

ISCM traceability and the sequential nature

An aggravating limitation of ISCM to the previous limitation is its sequential nature and *halāl* traceability. *Halāl* traceability relates to how a supply chain traceability system is used to retrospectively trace and verify *halāl* compliance in the supply chain (Zainuddin *et al.,* 2020). Traceability also augments a supply chain manager's capacity to authenticate the history, location or application of a supply chain item through *Shariah*-compliant documentation.

ISCM traceability, as seen in *Figure 9's green arrows*, bridges and further integrates the supply chain's processes and roles from the front-end to the construction phases of the project. However, as seen in *Figure 16*, this can disrupt the basic roles of SCM processes in the LSCP due to the rigorous and recurring *halāl* verification process needed to maintain *halāl* integrity. Thus, SCM processes may be undermined as a result of upkeeping *Shariah*-compliancy measures: –

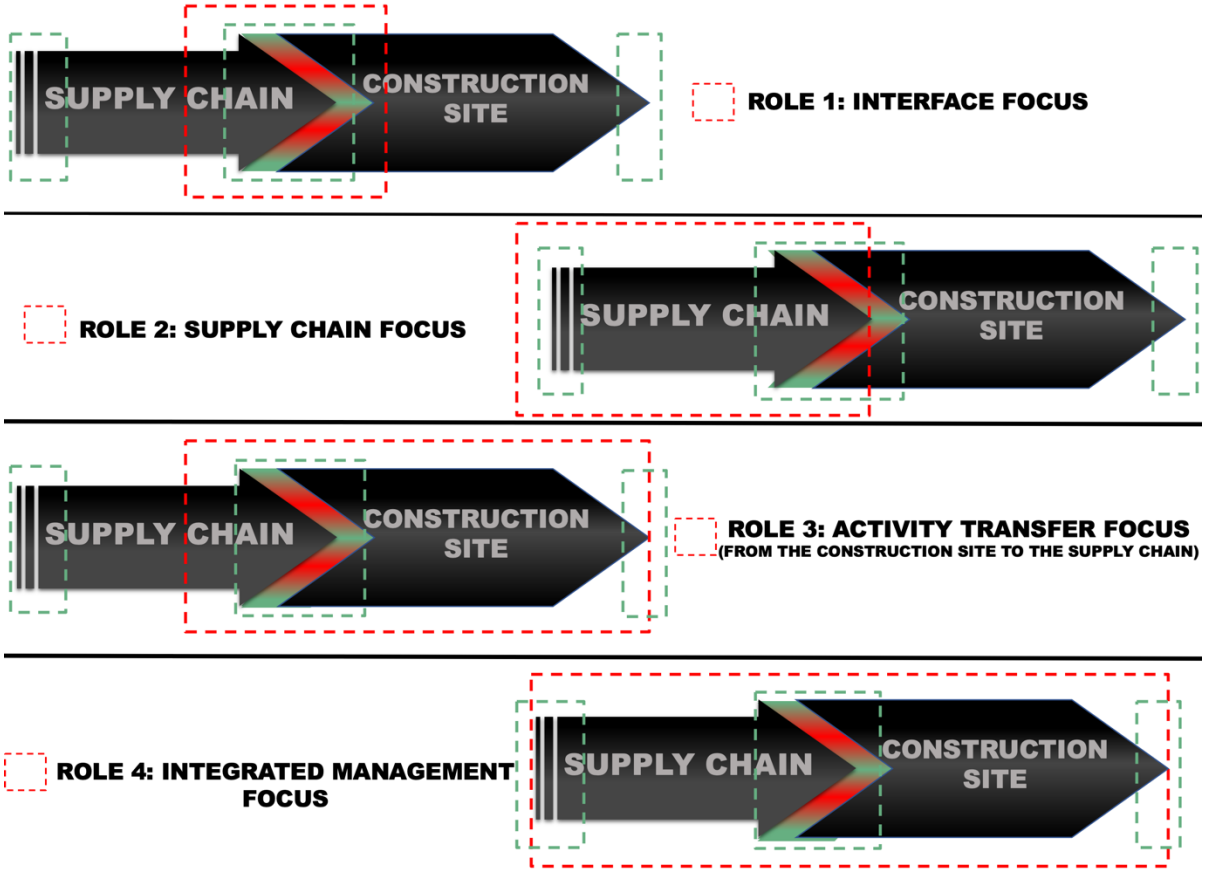

Figure 16: adapted from Vrijhoef & Koskela (2000).[6]

In addition, this is further aggravated by the sequential nature under which *halāl* checks are carried out on a project-phase level (*Figure 9*) and a supply chain level (*Figure 16*). The key issue here is that irrespective of whether every stage-gate of the front-end has always been *Shariah*-compliant, they will be reviewed numerously. This means that the flow of the supply chain and its processes will be periodically distorted by *halāl* verification checks. The result can be an inherent delay within the supply chain, and the overall execution of the LSCP's front-end.

Moreover, it is arguable that such relapse can be inefficient in terms of time, money and resources. This contravenes the ISCM principles of being resourceful, and also undermines the complex approach needed in the front-end of LSCPs. By hindering the ability to provide complex solutions for the complex front-end, a vital propellant for front-end success is being impeded (Joosse & Teisman, 2020). Thus, PPs and SCAs should alleviate these negative impacts, by always allocating extra time and aligning ISCM processes constructively with SCM processes.

[6] SCM processes (*red boxes*) and ISCM processes (*green boxes*) must not intersect with each other to prevent the distortion of progressing through the key SCM roles (*black arrows*).

Behavioural and contractual limitations of ISCM

Other limitations of ISCM are not necessarily a derivative of ISCM *per se*, but rather inherent limitations of any form of SCM including ISCM. The first example is the internal rivalry among SCAs that exists (Fawcett *et al.,* 2008). Although ISCM mandates a sisterly/brotherly approach, individualistic goals might override such collective ones. These overriding interests can affect mutual cooperation, and adequate information sharing. Thus, a potential result could be a lack of willingness to share information, risks and profits.

Additionally, ISCM requires clear collaborative guidelines to avoid each SCA and PP interpreting the *Shariah* in the way that justifies their conduct. Yet, construing a one-fit-for-all interpretation is also a hefty task that might repel SCAs/PPs from being *Shariah*-compliant. This can distort how supply chain managers and contractors will apply the LSCP's contract whilst being *Shariah*-compliant, creating uncertainty in how to administer the contract.

There are further contractual issues that may also arise. Where the LSCP adopting ISCM faces any *Shariah*-noncompliant conduct, the English courts have recurrently reinforced that the contract will prevail. However, English law does not recognise and enforce any religious law that is not part of a national legal system or an arbitration agreement.

Thus, if a court rules on the basis that could deem a contract *Shariah*-noncompliant, the PPs/SCAs will be in an awkward situation. They will have to carry out the works either way because *Shariah*-compliance should not contravene English law. Such notion has not been contested by Islamic scholars because Islam mandates Muslims to obey the law of the land, and the authority they live under (*Qur'ān,* 4:60). Therefore, when parties adopt an ISCM approach, it should never be led to becoming *Shariah*-noncompliant to avoid being in such a position.

Mitigating the impact from ISCM's limitations

The limitations that have been discussed in this Chapter can seem very arduous upon the parties that could face them. Yet in reality, the solution can be simpler than one would think. In regard to *halāl* integrity verifications, PPs/SCAs should attempt placing such checks in line with key SCM roles. Hereby, the SCM and

ISCM processes seen in *Figure 16* should be completely handled separately under which the *green* and *red* borders do not intersect. Otherwise, ISCM processes must be fully embedded within those of SCM, whereby the *green* border would be within the *red* border. Resultingly, *halāl* integrity checks become constructively aligned with the overall process of SCM in the supply chain.

Moreover, by aligning and integrating ISCM and SCM processes, the subjectivity of applying ISCM in line with the *Shariah* becomes correlated with SCM's scientific measurement methodologies. Hence, any forthcoming Islamic arrangements will contain scientific and math-based substance along moral-based variables. Nonetheless, integrating a system, whereby moral principles are implemented throughout a scientifically viable process, is beneficial to the LSCP's overall front-end and back-end well-being (Charrett, 2018).

This Chapter has examined where ISCM may bring limitations to those applying it. Despite such limitations, it has been reaffirmed that the purpose of using ISCM in the very first place is to promote good faith and certainty. Thus, when PPs and SCAs cease to apply ISCM in line with well-established laws and practices, they will collectively suffer the burden of failure.

6.CONCLUSION

Conclusively, it had been drawn that ISCM carries positive contributions and certain mitigatable limitations. In terms of limitations, it can be established that ISCM, like SCM and other project management models, can never be capable of guaranteeing a wholesome front-end, and a one-hundred percent chance of the LSCP being successful. Rather so, it optimises existing risk assessment and front-end-definition practices, whilst contributing further moral and contractual rigours to amplify the probability of the LSCP succeeding.

The greatest limitation faced when using ISCM is that it relies upon subjective endeavours that can be interpreted differently under different contexts. Therefore, ISCM's effectiveness and benefits cannot be unconditionally yielded on their own. Rather so, in order to properly work, ISCM requires parties to a LSCP to respect ISCM's moral principles and to diligently abide by its contractual principles too.

On the positive end, it can be concluded that ISCM carries a range of benefits that could be of additional contribution to the existing framework of SCM. Such benefits are hinged upon providing significantly greater certainty, morally backed risk assessment tools, and an environment where it is all for one and one for all. Hence, ISCM promotes collaboration, equal profit-loss sharing and good attitudes by compelling parties to respect moral values and incentivising the rewards to be collectively shared.

Achieving and concluding research objectives

This dissertation has attempted at contesting the extent to which ISCM can help alleviate longstanding problems in the UKCI by its contributions to the front-end of LSCPs. To do this, it endeavoured to fulfil three key research objectives: –

1. to illustrate that ISCM's incorporation of Islamic contracts and moral principles offer new solutions to LSCPs;
2. to explicate that ISCM contributes to the front-end, by further enhancing existing techniques; and
3. to demonstrate the benefits of ISCM by explaining them and applying them to a LSCP's front-end.

ISCM undoubtably offers new solutions to LSCPs that are not equally seen under SCM. SCM promotes incentivisation from the client's end on contractors. ISCM goes a step further by incentivising the entire supply chain through arrangements such as the *ju'alah.* Moreover, ISCM does certainly further enhance existing models in the front-end. For example, *halāl* verification and *halāl* traceability's implementation of a retrospective and continuous compliance system adds upon stage-gates' intermittent reviewal system.

Looking back at Holyrood for one last time, this dissertation has met all three-research objective by the points aforesaid, and by proving their viability in a project like HPP. The dissertation offered an insight towards how HPP may have succeeded, by pre-emptively avoiding the ripple effect it faced as a result of the parties' misconducts and lack of front-end sorting. Thus, it can be concluded that by using ISCM, parties can never pre-emptively avoid every risk. Rather so, they can definitely be compelled to eliminate obvious risks such as the one hundred percent risk-exposed design in HPP. This dissertation has laid out how the moral principle of *harām* forces ISCM tools such as *mukhātarah* risk assessments to take place, in order to classify permissible and fatal risks.

Awareness of the research's limitations and areas for future research

The research had taken best endeavours in reaching out to a wide range of academic literature to bring in ISCM from the food industry into the UKCI. However, this task had significant limitations because ISCM has never been applied in the UKCI in the same manner carried out by the dissertation. As a result, it was difficult to find academic literature that extensively focuses on ISCM in construction, let alone the front-end of LSCPs. However, due to Islamic law's nature of being inclusive and applicable to every aspect of life, it was possible to gather common Islamic principles and foundations. These are principles and foundations of Islamic finance, Islamic contracts, ISCM in the food industry and Islamic moral values.

In terms of future research, this dissertation has certainly set a starting point from which further research can take course. One obvious topic for future research is ISCM's contribution to the back-end of LSCPs. Another sufficient area could be an extensive comparative analysis of SCM and ISCM in the UKCI. A final and very interesting area for further research, is a scientific study on the impact that ISCM could

inflict upon SCM's scientific-based performance measurement tools. However, all of these topics would require further research methodologies, incorporating advanced workshops and interviews with UKCI practitioners, which was not possible for this dissertation.[7]

Decisively the positive contributions of ISCM to the front-end of LSCPs outweigh the limitations. However, ISCM does rely on PPs and SCAs to allow it to succeed. Thus, since ISCM brings it all down to the parties of the LSCP, ISCMs greatest limitation is ironically its greatest contribution. If such parties are to respect and apply ISCM principles, the LSCP will be highly likely to succeed. If not, the LSCP will probably fail. As for the UKCI, if PPs and SCAs are willing to accept and adhere to change the UKCI for the better, ISCM has been presented by this dissertation as a viable model in pursuit of such change.

[7] Please refer back to *Appendix 2* for further clarification.

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8.APPENDICES

APPENDIX 1

Literature review from which the dissertation approaches SCM

The reason this literature review on SCM has been carried out and placed under this *Appendix,* is due to the extensive explanations needed to highlight upon SCM and its principles. Placing this literature review in the main text would have lessened the dissertation's emphasis on ISCM. Yet, due to ISCM being advocated as a constructive addition to SCM, it only would make sense to present the perspective from which this paper interpreted SCM in the *Appendices* section.

Generally, SCM augments relationships between SCAs, aids in integrating processes, and it enshrines the creation of value (Latham, 1994). Applying SCM principles can aid in alleviating the UKCI's main pitfalls. Such pitfalls include coordination issues, lack of internal/external customer focus (O'Brien & Fischer, 1993), poorly managed relationships, lack of trust (Cooper & Ellram, 1993), and commitment (Egan, 1998).

Thus, SCM has been widely welcomed as a viable solution for increasing profitability, performance, and inter-organisational relationships (Agapiou *et al*., 1998; Green & Lenard, 1999; London & Chen, 2006; Murray *et al*., 1999), construction performance (Horvath, 2001), and project management. SCM can concurrently enlarge the competitive advantage of PPs/SCAs by integrating and directing its processes based on the clear success factors (Mehdi Riazi & Nawi, 2018; Pryke, 2009).

Further to the SCM principles introduced in the Introduction, other significant SCM principles in a LSCP context encompass sharing risk (Kumaraswamy *et al*., 2004), and rewards (Eriksson & Pesämaa, 2007). The collaborative endeavours enshrined by SCM steers PPs and SCAs towards further collaborative SCM principles. These include assurance of sharing accurate information (Mehdi Riazi & Nawi, 2018), joint reviews of information and progress (Ritchie & Brindley, 2007), and standardisation of repetitive processes.

Research undertaken by Fawcett *et al.* (2008) demonstrates that effective SCM can positively impact both the client and contractor, without it contravening such parties' respective interests. It benefits both parties by enhancing asset utilisation, activity fulfilment as per cost/quality requirements, meeting processes on time, and handling unforeseeable neutral events. From a client perspective, it has been drawn that effective SCM increases client focus, which retrospectively increases client responsiveness, and client satisfaction.

Looking from a contractor viewpoint, effective SCM can reduce purchasing costs of material, which helps controlling the build-up of cost throughout the supply chain. It also allows the contractor to be able to identify critical focal areas to maintain performance (Fawcett *et al.,* 2008). These bolster the contractor's ability to control individual costs, whilst maximising its firm's productivity, which resultingly reduces the final delivery cost.

Figure 2 illustrates how the supply chain can have a mix of costs that can be transactional, and/or accumulated from the SCAs' overhead profit charge, and/or costs that are requisite for the LSCP's delivery (IoCE, 2017). Choi & Hong (2002) argue that the collaborative approach driven by SCM can desegregate and prevent the excessive build-up of transactional costs. Henceforth, impending costs that will be incurred on the subsequent SCAs are reduced.

Villena & Gioia (2018) further add that such trait enables PPs and SCAs to yield economic rewards from such supply chain. To further utilise this positive impact and integration, Pryke (2020) found that the client can adapt raw mechanisms and uptake certain risks and costs. Aneesa *et al.* (2015) found that the contractor can procure the LSCP in a collaborative orientated route to optimally integrate and excerpt the supply chain's full benefits.

When particularly looking at SCM in LSCPs, where processes are uniquely complex, research conducted by Mehdi Riazi & Nawi (2018); Al-Kharashi & Skitmore (2009); Chan & Kumaraswamy (1997); and Mansfield (1994), has suggested that SCM yields the same benefits irrespective of a project's complexity. However, they do conclude that such success is dependent on SCM principles being appropriately applied to the project.

Chan & Chan (2004) support this, whereby SCM principles can indiscriminately yield its benefits. This is because it is largely aimed towards achieving completion on time, within cost-budget, and per quality demanded. Furthermore, Al-Kharashi and Skitmore (2009) highlight that typical supply chain issues, such as delay, have become well-examined internationally. Thus, despite the complex processes and problems found in LSCPs, SCM is not operating in an unresearched industry.

On the other end of the academic literature, there are critics of SCM being applied in LSCPs, let alone a construction context (Bask & Juga, 2001; Briscoe & Dainty, 2005; Fearne & Fowler, 2006; Jahre & Fabbe-Costes, 2005; Winch, 2003). A major problem causing such view is the lack of clarity and unanimity on SCM's role (Green & May, 2003; Green *et al*., 2005; Winch, 2003). Hence, Aneesa *et al.* (2015) argue that SCM should be applied when further scrutiny of its contribution to construction is made.

Jones and Saad (2003) also argue that SCM has been applied in a construction context over a relatively short period of time. Another diverging point in the academic literature is SCM's impact on the interfaces within construction supply chains. Some have argued in favour of SCM's ability to enhance interfaces (Papadopoulos *et al*., 2016). Yet, others have contended that interface-problems may be too big for SCM to handle (Hong-Minh *et al*., 2000).

An aggravating factor has been that supply chain risks often go undealt with. This undermines the front-end and retrospectively drives the LSCP as a whole towards failure (Pryke, 2020). As a result, mistrust and a non-proactive approach have hindered the utilisation of SCM in LSCPs (Pryke, 2009). Such mistrust creates an adversarial environment (Cox & Ireland, 2002).

It also drives PPs and SCAs towards focusing on their individual interests (Pryke, 2020). This is why Palaneeswaran *et al*. (2003) argue that using SCM principles conflict with the natural practices of the UKCI. These conflicts can also be illustrated in real life LSCPs. Key examples are Channel Tunnel, the Holyrood Parliament (Fraser, 2004), and London Underground, all of which faced delays, excessive costs, and highly adversarial environments (Briscoe *et al*., 2004).

Despite many confirming this incompatibility and the low satisfaction from the UKCI's output (Chan *et al.,* 2003), Aneesa *et al.* (2015) believe that SCM can still be

applicable in the UKCI. They further argue that clear management and proper identification of the supply chain's processes and their interfaces, enables SCM's proper application. As such, project practitioners and SCAs, particularly the client and contractor, should refrain from being individualistic and head towards a more collaborative pain-gain sharing approach (Briscoe *et al*., 2004). This is where ISCM becomes a highly effective solution for the problems and adversarial attitudes illustrated above.

APPENDIX 2

Further notes on the research methodology

The nature of ISCM being a new concept that this dissertation is bringing to the UKCI from the food industry, would have required an advanced approach to carry out primary research. Firstly, a reasonable assumption is that most UKCI practitioners would unlikely be knowledgeable of the key and basic principles underlying ISCM, Islamic morals and Islamic finance, let alone ISCM in a construction context. This would have required workshops to be run on such topics in order to give such practitioners the backgrounded knowledge needed.

Secondly, only after carrying out those workshops, would such UKCI practitioners be able to sensibly respond to the interview questions concerning ISCM. However, even then, there would be the possibility that those practitioners would have remained unclear on ISCM. Even so, they may have remained unable to respond to the interview questions effectively, due to their lack of contextual knowledge of ISCM in light of Islamic law.

This would have required a further follow up to the workshops, in order to ensure that the potential interviewees were clear on the topic to be interviewed upon, prior to the interviews taking place. Thus, there would have been the recurrent limitation of potential interviewees being unacquainted with ISCM before being able to sensibly respond to questions in any meaningful way.

Thirdly, the author was aware of the potential of the Covid-19 pandemic causing a lockdown back in December 2019/January 2020. In light of that, a lockdown would have been highly likely to happen in the ensuing months. It would have been impractically difficult to carry out the workshops prior to the UK's lockdown, due to the research ethics form not sufficing up until March. Even after lockdown, any workshop and/or interview would have been virtually difficult to carry out.

The final point is that even where Covid-19 was non-existent, and the workshops/interviews were carried out, the author may have run the risk of spending an enormous amount of time talking with people that may have remained perplexed over what to say with regard to ISCM. In light of all these points, the author recognised that the level of understanding about ISCM in the UKCI is quite limited. Thus, it made sense to focus on using secondary resources instead, in order to address the points

that would have been sought after from these interviews. Having said that, any future research would require the advanced approach illustrated throughout this *Appendix.*

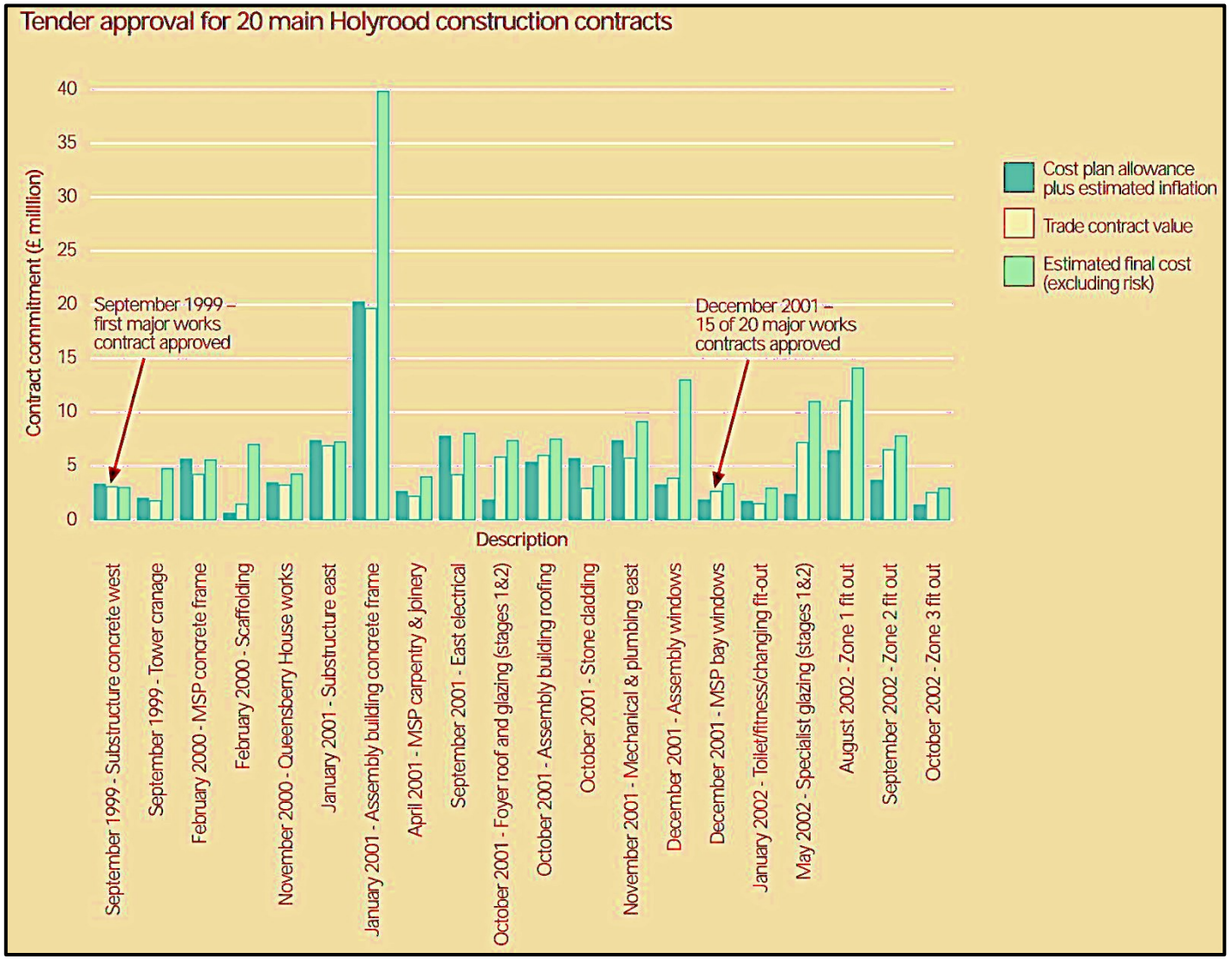
APPENDIX 3

Basic comparison between a *Shariah*-compliant agreement and a conventional agreement for the purposes of using ISCM.

PRINCIPLES OF MU'ĀMALĀT (TRANSACTIONS)		CONTRACTS	
		SHARIAH-COMPLIANT	CONVENTIONAL
1	BUSINESS TRANSACTIONS ARE NOT FORBIDDEN	✓	✓
2	CONTRACT FACILITATES BUSINESS TRANSACTIONS	✓	✓
3	CONTRACT FORBIRDS INFLATED PRICING OF GOODS	✓	✗
4	CONTRACT FORBIDS CHARGE OF INTEREST; INVOLVEMENT OF HARĀM SUBSTANCE	✓	✗
5	CONTRACT AVOIDS MONOPOLISTIC ACTIVITIES	✓	✓
6	CONTRACT TO BE CARRIED OUT IN GOOD FAITH AND WITH PATIENCE AND TOLERANCE	✓	✓
7	CONTRACT UPHOLDS TRUTHFULNESS AND INTEGRITY AT ALL TIMES	✓	✓
8	CONTRACT FORBIDS GHARAR AND MAISIR	✓	✗
9	PARTIES MUST FULFIL THEIR OBLIGATIONS DILIGENTLY	✓	✓
ELEMENTS OF THE 'AQD (CONTRACT)		SHARIAH-COMPLIANT	CONVENTIONAL
10	IJĀB (OFFER) AND QUBŪL (ACCEPTANCE)	✓	✓
11	'AQÍDAN (QUALIFICATIONS) OF THE PARTIES	✓	✓
12	MA'AQŪD (SUBJECT MATTER) AND ALAID (CONSIDERATION)	✓	✓

Appendix 3: adapted from Khairuddin et al. (2019, p. 90).

APPENDIX 4



Appendix 4: borrowed and edited from Audit Scotland (2004, p. 60).

9.RESEARCH ETHICS FORM

School of Construction and Project Management

Research Ethics and Risks Form for Taught Students

Students are required to obtain appropriate ethical approval before collecting data.
If data collection is conducted without a favourable ethics opinion, the dissertation may be deemed as failed.

Part I Section 1 Student Details

Family Name	El Daouk	Given Name	Mohamad
Student Email	[redacted]	Student Number	19027620
Course/Programme	Project and Enterprise Management		
Supervisor	Dr Andreas Credé		

Dissertation Title

The contribution of Islamic Supply Chain Management to the Front-End of Large Scale Complex Projects

Research Question or Hypothesis

What does Islamic Supply Chain Management ("ISCM"), (aka, Halal Supply Chain Management/Shariah-compliant Supply Chain Management/Halālan Tayyiban) have to offer to the front-end of large-scale construction projects? The most basic definition of ISCM is the process wherein a product is designated Shariah-compliant by having the entire process involved to its production and distribution adhere to Islamic law (Khairuddin et al., 2018). The inherent hypothesis is that Islamic values help eliminate uncertainty, inefficiency and being wasteful. There is no reason why applying ISCM principles to the pre-project phases of largescale projects should not help enhance definition and cost efficacy. This is because the concept itself is straightforward whereby the front-end of large scale projects should be managed without taking extravagant risks, and without spending resources in a wasteful manner.

Section 2 Data Collection

2.1 From where or whom will you source the data? (E.g. business professionals/ policy makers)
This dissertation will entail a comparative literature review of the front-end in large scale projects and the differences that manifest upon applying ISCM principles. Therefore, the author will resort to

law books that talk about Islamic law, particularly those dealing with Shariah Compliancy, of which ISCM falls under. Hence, the potential sources will be professional academics in the project management field, particularly in the front-end of large scale projects such as Peter Morris and Stephen Pryke. In terms of ISCM, authors such as Abdul Rashid Khairuddin, a leading Islamic academic in the International University of Malaysia and Kiyoshi Kobayashi, a notable researcher in Shariah Compliancy at the University of Kyoto.

2.2 What data collection method(s) will you use? (E.g. interviews/ survey)

There will be no data collection, but rather a comparative literature review.

2.3 Where will you collect the data? Please tick all that apply.

- ☐ UK
- ☐ Outside the UK
- ☐ Skype
- ☑ Online
- ☐ In participants' office(s)
- ☐ In public setting(s)
- ☐ On construction site(s)
- ☑ Other (please describe)

Online and from academic literature.

2.4 If your data collection will be undertaken outside the UK, will you undertake to secure in advance all necessary local approvals and to accommodate local laws, practices, cultural and political sensitivities?

YES ☐ NO ☐ NOT APPLICABLE ☑

Section 3 Ethically-sensitive Issues

Please tick YES or NO	*YES*	*NO*
3.1 Does your data collection involve people		
a) Being recorded during their normal work activities*?	☐	☑
b) Being observed during their normal work activities?	☐	☑
c) Being filmed during their normal work activities?	☐	☑
d) Providing personal, special category or confidential data about individuals or organisations?	☐	☑
e) Providing special category or confidential commercial or policy information?	☐	☑
f) Receiving personal feedback (e.g. after psychometric tests)?	☐	☑
g) Undergoing any other experience that might cause physical or psychological distress or harm?	☐	☑
3.2 Does your data collection involve contact with people		
a) Aged less than 18 years?	☐	☑
b) Who lack physical or mental capacity? (e.g. someone with a learning difficulty, nursing home residents)	☐	☑

* Note that a research interview is **not** a 'normal work activity'.

c) Who might be vulnerable or in a potentially vulnerable group? ☐ ☑
(e.g. a client of a health or social service agency)

Section 4 Data Collection Context

4.1 Will you collect data within an organisation? ☐ ☑
4.2 Will your data include visual imagery collection where there is sensitivity regarding personal identification and confidentiality? ☐ ☑
4.3 Will your data collection involve data sets from secure sources? ☐ ☑
(e.g. from a defence establishment)

If the answer to Question 4.1, 4.2 or 4.3 is YES, organisational (e.g. management) as well individual consent may be required.

Section 5 Risk Assessment

Please tick YES or NO	*YES*	*NO*
5.1 Does your data collection involve visiting a location, using material, equipment or technology unsupervised and/or where you are at risk regarding health and safety? (e.g. a construction site, use of machinery)	☐	☑
5.2 Does your research involve significant travel beyond that which you would normally undertake?	☐	☑
5.3 Does your work involve contact with individuals who have committed a criminal offence?	☐	☑
5.4 If the answer to Questions 5.1, 5.2 or 5.3 is YES, have you discussed with your supervisor how the risks will be managed?	☐	☑

Section 6 Process of Ethics Consideration

Please tick YES or NO	*YES*	*NO*
6.1 Have you completed online training on Data Protection for undergraduate and Masters students?	☑	☐

https://www.ucl.ac.uk/data-protection/ucl-data-protection-undergraduate-masters-level-students

6.2 Have you consulted with your supervisor on		
a. Personal risk	☑	☐
b. Protection of research data	☑	☐
c. Participant protection (informed consent, opt out, anonymity, confidentiality)?	☑	☐
6.3 I agree		
a) To consult with my supervisor on any changes to my research topic, method or plans	☑	☐
b) To consult with my supervisor on any new ethics or risk related issues that emerge in the course of my research	☑	☐

c) To include this form, signed by the School Ethics Committee, in the dissertation I will submit ☑ ☐

d) To gain UCL Research Ethics Committee or other approvals if needed, and to include these in the dissertation submitted ☑ ☐

e) To provide my supervisor with a list of contact details for my participants and full data set, if requested ☑ ☐

f) That the dissertation that I will submit is based on my own original work and data collected by me, unless otherwise clearly attributed ☑ ☐

Student Signature: Date: 3 March 2020

Part II To be completed by the Supervisor

Please tick YES or NO	*YES*	*NO*
1. As Supervisor, I confirm that the student has considered and discussed the issues associated with their planned research, including		
a. Personal risk	☑	☐
b. Data protection, including anonymising data, secure storage and retention period	☑	☐
c. Participant protection, including informed consent, opt out, anonymity and confidentiality?	☑	☐

Please complete either Question 2 OR Question 3.

2. Please summarise the key issues specific to this proposal, how these will be managed and any further comments or concerns. **[Required field]**

RESEARCH FOR THE DISSERTATION WILL DRAW ON SECONDARY SOURCES, CONSEQUENTLY PRIMARY DATA FROM PEOPLE OR ORGANISATIONS WILL NOT BE INVOLVED.

OR

3. I confirm that the student plans to use ONLY secondary data from sources which bear no security, confidentiality, commercial sensitivity or data protection risks, and where appropriate approvals have been obtained. Primary data from people or organisations will NOT be collected. I therefore deem this research exempt from further ethics scrutiny.

Please tick YES or NO *YES* ☑ *NO* ☐

Supervisor Signature:

Date: 6/MAY/2020

Part III To be completed on behalf of the School Ethics Committee

The School Ethics Sub-Committee advises that the research proposal

a) Is deemed by the School Ethics Committee exempt from further ethics scrutiny ☐
b) Has been deemed by the Supervisor exempt from further ethics scrutiny ☐

c) Should be submitted to the UCL Research Ethics Committee ☐
d) Is rejected due to insufficient information ☑
e) Is rejected – research methods should be reconsidered ☐
f) Is rejected – the research topic should be reconsidered ☐

If a) or b) are ticked, the research may proceed on the basis described.

In all other cases, data collection MAY NOT PROCEED without further ethics scrutiny.

Comments Please make 'ticks' obvious
At the moment it is not
clear which ones are
ticked.

Signed ..... Date: 12/3/20

On behalf of the School Ethics Sub-Committee

Part IV Resubmission to Ethics Sub-Committee

Please describe how the feedback from the previous submission has been addressed.

TICK MARKS WERE UNCLEAR IN THE ORIGINAL SUBMISSION. THIS HAS NOW BEEN CORRECTED. AS ALREADY PREVIOUSLY STATED, THE RESEARCH FOR THE DISSERTATION WILL DRAW ON SECONDARY SOURCES CONSEQUENTLY PRIMARY DATA FROM PEOPLE OR ORGANISATIONS WILL NOT BE INVOLVED

Student Signature: Date: .....

Supervisor Signature: Date: 31/3/2020

a) Is deemed by the School Ethics Committee exempt from further ethics scrutiny ☐
b) Has been deemed by the Supervisor exempt from further ethics scrutiny ☐

c) Should be submitted to the UCL Research Ethics Committee ☐
d) Is rejected due to insufficient information ☐
e) Is rejected – research methods should be reconsidered ☐
f) Is rejected – the research topic should be reconsidered ☐

If a) or b) are ticked, the research may proceed on the basis described.
In all other cases, data collection MAY NOT PROCEED without further ethics scrutiny.

Comments

.....

Signed ..... Date: .....

On behalf of the School Ethics Committee.

Student Name: EL DAOUK, Mohamad

Student Number: 19027620

Part IV To be completed on behalf of the School Ethics Committee

The School Ethics Sub-Committee advises that the research proposal:

a) Is deemed by the School Ethics Committee exempt from further ethics scrutiny

b) Has been deemed by the Supervisor exempt from further ethics scrutiny X

c) Should be submitted to the UCL Research Ethics Committee

d) Is rejected due to insufficient information

e) Is rejected – research methods should be reconsidered

f) Is rejected – the research topic should be reconsidered

If a) or b) are ticked, the research may proceed on the basis described.

In all other cases, data collection MAY NOT PROCEED without further ethics scrutiny.

Comments

The issues mentioned on the previous form have been addressed.

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Signed …… …….. Date: ……..08/04/2020.....

On behalf of the School Ethics Sub-Committee