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Chapter Six

Operationalisation, Measurement and Analysis of the “Agility-Enabling” Constructs

6.1 Introduction

The previous chapter (Chapter 5) was concerned with exploring the nature of the environment suggested to be affecting the management and delivery of healthcare services provided by the two NHS Trusts, chosen as case study organisations for the purposes of this research. Exploring the nature of such an environment involved identifying a number of dimensions addressing the amount of turbulence in the environment, represented by the: *amount of change/dynamism*, *degree of unpredictability*, and *degree of uncertainty*. These dimensions characterise changes in the requirements, expectations and pressures emanating from a variety of factors making up such an environment. In addition, the previous chapter was concerned with exploring the *importance* of the requirements of such environmental factors, in terms of their effect on the management and delivery of healthcare services provided by the Trusts.

After having explored the aforementioned aspects addressing the nature of today’s environment affecting the Trusts, Chapter Five proceeded to identify and examine how such Trusts perceive their need for Organisational Agility, as essentially being driven by the nature as well as importance of environmental change, so as to be able to better respond to and, thus, deal with, the pressures, requirements and expectations placed on them by various environmental stakeholders or parties.

Findings emerging from exploring the nature of the environment affecting the two Trusts, as well as their perceived need for organisational agility, strongly indicate that both Trusts perceive that there is a clear need for a higher level of agile response on their parts, necessary to deal with the requirements placed on them by an *environment* that is characterised by a *highly important* overall effect on the well-being of these Trusts in managing and delivering their healthcare services, as well as by reasonably *dynamic* and *uncertain* changes in its requirements and expectations.

In view of such findings, the third research objective addressed in this chapter focuses on exploring and identifying those capabilities that can enable the Trusts to attain the required higher level of agility perceived by both of them to be necessary in responding sufficiently to such environmental changes. In this sense, the third objective of this research builds on the reality of the environment affecting these Trusts, as well as their emerging need for agility, by seeking to identify those capabilities that can well underpin their efforts to attain such a higher level of agility.

Therefore in the context of seeking to fulfil the third research objective, the third and final part of the self-completion questionnaire was designed, which includes seven main “agility-enabling” constructs developed conceptually by this research. These constructs from the study’s paradigm developed to guide the empirical phase of the research concerned with the third objective. The paradigm is presented in *Appendix L*, and includes the following “agility-enabling” constructs:

1. Dynamic Capabilities.
2. Leadership and Change Management.
3. Leeway in Organisational Structure.
4. Leeway in Organisational Culture.
5. Leeway in Technology.
6. Environmental Scanning.
7. Operational Flexibility.

For each of these constructs, a number of items were designed in order to enable the operationalisation and measurement of that particular capability. These items represent attitudes, behaviours and practices, which implicitly reflect a number of *underlying dimensions* related conceptually to the main construct. In this way, such dimensions reveal and illustrate how agility, conceptualised as *the ability to respond and adapt to continuous and often unpredictable change*, can be enabled or facilitated in an organisation. Such an organisation is represented by healthcare service organisations (NHS Hospital Trusts) in the case of this research.

Based on such items, respondents to the self-completion questionnaires were asked two main questions, each serving a particular purpose (see Appendix B: The Self-Completion Questionnaire; Third Part):

- **Question 4.1:** - The purpose of this question is to determine the extent to which each of the capabilities identified in this research to be underpinning / facilitating organisational agility, is practised in the two NHS Trusts. In other words, this question assesses the level of implementation / practice of the identified “agility-enabling” capabilities, on the part of each Trust.
- **Question 4.2:** - The purpose of this question is to assess the extent to which the two Trusts believe that such capabilities are important and relevant in enabling them to respond and adapt to changes in their external environments in a flexible, responsive and agile manner, regardless of whether such capabilities are implemented in the Trusts or not. In other words, this question assesses the perceived importance of the identified “agility-enabling” capabilities, on the part of the NHS Trusts.

6.2 Operationalisation and Measurement of the “Agility-Enabling” Constructs

Sections 6.2.1 through to 6.2.7 explain in detail how each of the aforementioned seven “agility-enabling” constructs were operationalised and measured, through conceptually developing the items measuring each of them from the relevant extant literature. Also, the operationalisation and measurement process of the seven main “agility-enabling” constructs employs three types of statistical techniques. These are: Exploratory Factor Analysis (EFA), Internal Consistency Reliability Test (Cronbach’s alpha), and the Summated Scale technique. These statistical techniques are used in this context in an effort designed to achieve three main aims, in the following order:

First: - Exploratory Factor Analysis (EFA) is conducted in order to identify and extract the underlying conceptual dimension(s) or component(s), which emanate from each of the seven main aforementioned “agility-enabling” constructs, developed and designed by this research.

Second: - Internal Consistency Reliability Test (Cronbach's alpha) is then employed in order to assess the reliability of each resulting dimension / scale, using Cronbach's alpha coefficient.

Third: - After identifying the items making up each new component / factor, as well as ascertaining the internal consistency reliability score (Cronbach's alpha coefficient) for it, a summated scale for all the items constituting each resulting factor is then created by combining / summing these items into one total, which can then be used to represent a new variable / factor, through calculating their average score (Hair et al., 1998).

- Note that the rationale for using these statistical techniques is explained in Chapter Four under sub-section 4.8.3: "*Exploratory Factor Analysis*".

The input data for such an operationalisation and measurement process are based on Question 4.1, which asked respondents to rate the extent of their agreement with each of the items measuring the practice of the aforementioned seven constructs, on a "four-point" Likert-type scale that ranges from 1: "Strongly Disagree", to 4: "Strongly Agree".

Based on the previous explanation, the following sub-sections present the discussion of the operationalisation process described earlier for each of the "agility-enabling" constructs (i.e. Dynamic Capabilities, Leadership and Change Management, Leeway in Organisational Structure, Leeway in Organisational Culture, Leeway in Technology, Environmental Scanning, and Operational Flexibility).

6.2.1 Operationalisation and Measurement of the "Dynamic Capabilities" Construct

Chapters Two and Three have paid particular attention to highlighting and discussing the new reality characterising today's dynamic environment, in that it is increasingly being characterised by turbulence and uncertainty driven by continuous and often unpredictable changes. Subsequently, it was argued that such turbulent environmental conditions have significant and all-encompassing effects on the ability of organisations, operating in such circumstances, to respond and adapt to these changes and, thus, sustain their viability, effective operation, and competitiveness.

As a result, the strategic thinking and management literature has witnessed a shift in the philosophical bases, which inform how organisations can build and sustain their competitiveness or effective operation in view of the dynamic and ever-changing reality of today's environment. The outcome of such a shift in the strategy literature has been the emergence and recognition of the need to incorporate the building and nurturing of dynamic resources, capabilities, and core competencies, in strategy development and planning. This emphasis on leveraging organisational resources and competencies, as argued by the proponents of the Resource-Based View of strategy (RBV) representing such a new approach to strategy development, is considered to be vital in enabling organisations to effectively respond to and, thus, thrive in, dynamic environments (Nelson and Winter, 1982; Teece, 1982; Wernerfelt, 1984; Prahalad and Hamel, 1990; Grant, 1991; Lado et al., 1992; Barney, 1991, 1995, 1996, 2001; Rumelt, 1993; Peteraf, 1993; Hamel and Prahalad, 1993, 1994; Leonard-Barton et al., 1994; Collis and Montgomery, 1995; Hart, 1995; Hayes et al., 1996; Hitt et al., 1998, 1999; Gagnon, 1999; Johnson and Scholes, 1999; Gilgeous and Parveen, 2001).

The aforementioned proponents of the Resource-Based View of strategy indicate that their approach to strategy development, which was discussed extensively in Chapter Two, arguably supplements the idea of fit reflected in the Market-Based View of strategy. In addition, they argue that the need for this complementary view of strategy is warranted by the new environmental landscape, which- as Hitt et al. (1999) argue, mandates that an organisation builds a unique set of resources and capabilities, which are dynamic so as to achieve congruence and flexibility with such an environment. This emphasis on nurturing dynamic resources and capabilities, in an effort designed to enable organisations to build and sustain their responsiveness and agility in view of today's turbulent environment, has culminated into the Dynamic Capabilities approach (Teece and Pisano, 1994; Iansiti and Clark, 1994; Grant, 1996a; Lei and Hitt, 1996; Teece et al., 1997; Hitt et al., 1998; Petroni, 1998; Eisenhardt and Martin, 2000).

According to this approach, Hayes and Pisano (1994) argue that in a dynamic and turbulent environment, an organisation should think of itself as a collection of evolving capabilities, not just as a collection of products and/or services, which provide the flexibility to embark on new directions. Hence, Gagnon (1999) indicates

that organisational agility in dynamic environments increasingly depends upon the role of dynamic capabilities, since such a dynamic development and leveraging of competencies and capabilities enables organisations to respond in an agile manner to changes in environmental requirements.

In the light of the contributions of a number of early proponents of the approach (Teece and Pisano, 1994; Iansiti and Clark, 1994; Grant, 1996a; Lei and Hitt, 1996; Teece et al., 1997; Hitt et al., 1998; Petroni, 1998; Eisenhardt and Martin, 2000), *Dynamic Capabilities* can be described as reflecting an organisation's capacity to achieve new and innovative forms of competitive advantage, by consistently renewing competencies to respond to the requirements of a changing environment. They are considered as organisational processes or routines embedded in organisations, by which organisations synthesise, integrate and acquire various resources and knowledge assets, and generate new applications from those resources. As such, they are responsible for maintaining a dynamic congruence between an organisation's resources, knowledge and skill bases, which form its capabilities and core competencies, and the changing requirements, demands, and conditions of its environment. In this sense, the means by which dynamic capabilities achieve such adaptation and rejuvenation of organisational competencies are primarily based upon organisational processes / routines, which continually build and renew / regenerate organisational capabilities.

As a result, organisational agility depends directly on an organisation's proficiency in building, developing, and leveraging resources, capabilities, and competencies, which can respond effectively to changes in the environment. This highlights the important role of organisational processes or routines responsible for integration, learning, and reconfiguration. In particular, the need for these dynamic organisational processes is exacerbated in the case of a rapidly changing environment, as argued by Gagnon (1999), since such an environment requires that competencies and capabilities be subject to continuous regeneration and renewal. Understanding the role of organisational processes / routines in building and renewing capabilities is facilitated by the consideration of knowledge as the foundation of capabilities, and that in order to renew such capabilities, the knowledge and skills underlying these capabilities should be the main subject of the renewal effort. In this way, the means by which

continual building and renewal of knowledge can be facilitated are through organisational routines / processes, which serve the roles of integration / co-ordination and learning. Such a capacity of the organisation to renew its knowledge bases- and thus its capabilities and core competencies- through integration / co-ordination and learning, has been referred to in the literature by a number of writers, including Iansiti and Clark (1994), Grant (1996a), Teece et al. (1997), and Garvin (1998).

Based on the previous discussion and the contributions of the aforementioned writers in the area of dynamic capabilities, items A.1-A.12 items were developed in order to measure the “agility-enabling” construct of *Dynamic capabilities* (see Appendix A: The Self-Completion Questionnaire, Part Three).

- Item A.1 reflects the basic conceptualisations of dynamic capabilities, which are reflected by the various definitions provided by a number of the aforementioned writers in the field of dynamic capabilities.
- Items A.2-A.6 were developed and designed according to Grant’s (1996a) “*knowledge-based theory of organisational capability*”, which is primarily based on the contention that knowledge is the foundation of capability, and that the capacity of the organisation to integrate the diverse knowledge bases held by its individual members is considered the essence of organisational capability. Such an integrative capacity forms the foundation for the process of building and renewing organisational capability, in response to changing environmental requirements and conditions, thus informing dynamic capabilities. In this sense, Grant’s (1996a) theory addressing the integration of knowledge in the vein of building organisational capability synthesises the aforementioned themes highlighting the discussion of the resource-based view of strategy and the dynamic capabilities approach, in sections 2.7 and 2.8, respectively. These themes include:
 - Dynamic capabilities as being organisational processes or routines, which serve the roles of integration / co-ordination, and learning, as well as inform the integrative capacity of the organisation in managing its various resources, as well as its knowledge and skills bases.
 - Knowledge as the foundation of capability, and the important role of learning as well as integration of diverse knowledge bases and skills, in renewing and

adapting such knowledge and, hence, capabilities and competencies, in response to changes in environmental pressures and requirements.

The synthesis of these themes is reflected in the integration of knowledge within organisations to form capability. Such integration of knowledge is characterised by three main characteristics, which have been incorporated into the design of items A.2-A.6. These are:

- a. The *efficiency of integration*, which represents the extent to which the capability accesses and utilises the specialist knowledge held by individual organisational members. This has been reflected in item A.3.
- b. The *scope and span of integration*, which represents the breadth of specialised knowledge that the organisation draws upon. Prahalad and Bettis (1986) and Lei and Hitt (1996) pay particular attention to the superior capacity of the organisation in accessing and integrating diverse and often contradictory forms of specialised knowledge, which is termed “meta-learning”. They indicate that organisations in dynamic environments must sustain the capacity to acquire and assimilate different and contradictory forms of knowledge, in order to continuously develop and sustain effective dynamic core competencies. The scope and span of integration, reflected in the integration of diverse types of knowledge, has been reflected in items A.2 and A.4.
- c. The *flexibility of integration*, which represents the extent to which a capability can access additional knowledge and reconfigure existing knowledge. This characteristic has been reflected in items A.5 and A.6, respectively.

Items A.7-A.12 were primarily developed in the light of the duality, which the dynamic capabilities approach stresses between *response to change* and the important role of *resource reconfiguration* in facilitating such response. This emphasis on the importance of resource allocation and reconfiguration in enabling an effective response to change, has been argued by Chow et al. (1999) to be relevant in the case of healthcare environments. They share the view expressed by Senge (1990), Peters (1994), and Deloitte and Touche et al. (1997), in that in order for healthcare organisations to be able to respond effectively to increasing pressure emanating from Government, the public and other healthcare organisations, such healthcare organisations are required to ensure that:

- Resources are allocated to their most effective use, and that
- Resources are quickly re-deployed in response to information about unexpected and unfavourable outcomes, impending threats, and emerging opportunities.

Consistent with this is the important role of co-ordination and integration in facilitating flexibility and responsiveness, as stressed through the “dynamic capabilities” approach. Notions of collaboration, networking, consolidation of resources, integrated care, partnerships and alliances have been repeated time and again in recent literature discussing how healthcare organisations can deal with and respond to the changing requirements of today’s healthcare environment (Iansiti and Clark, 1994; Goldman et al., 1995; Hughes and Carmichael, 1998; Goldman and Graham, 1999; Wright et al., 1999; Coddington et al., 2000; Meredith and Francis, 2000; Miller and Ahmad, 2000).

Based on such an importance of the dynamic co-ordination of resources, within the organisation and across multiple parties, particularly reflected in the networking, alliances, and resource sharing characteristics of the “*virtual organisation*”, items A.7-A.12 were designed and included in measuring the construct of dynamic capabilities.

The 12 items measuring the “Dynamic Capabilities” construct were subjected to Exploratory Factor Analysis (EFA), using principal component analysis as the extraction method, included as part of the statistical applications provided by the “Statistical Package for Social Sciences” (SPSS) software package version 11. Oblique rotation was employed, since there were sufficient theoretical grounds to assume that the factors are correlated, in contrast with orthogonal rotation, where factors are assumed to be uncorrelated. The results presented in table 6.1 indicate that two factors emerged from this analysis. The first factor was labelled “**Dynamic Integration of Knowledge**” (**DINTKNWL**) and consisted of items (A.2, A.3, A.4, A.5, A.6), whereas the second factor was labelled “**Dynamic Co-ordination of Resources**” (**DCOORRES**) and consisted of items (A.7, A.8, A.10, A.11, A.12). Two items, which are A.1 and A.9, were deleted since their loadings were less than 0.50, which is the adopted established minimum loading that is acceptable for

retaining items within each factor in this research, as advised by Nunnally (1978), Nunnally and Bernstein (1994) and Hair et al. (1998).

None of the loadings for the two resulting factors was less than 0.50, and they ranged from 0.50 to 0.904. The total cumulative variance explained by both of these factors was 55.6%, and both factors had an eigenvalue greater than 1. The Bartlett's Test of Sphericity (380.227, $P < 0.001$) and Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0.855) indicated that conducting the Exploratory Factor Analysis (EFA) was appropriate and that it satisfied the conditions for using such a statistical technique.

Items and Measures Description	DINTKNWL	DCOORRES
A.4 Capabilities within the hospital draw upon the integration of a broad scope of diverse types of individual specialised knowledge and expertise.	.904	
A.3 The hospital accesses, harnesses and utilises the specialised knowledge held by the professional individual members of the hospital in a manner that results in many benefits for the hospital.	.795	
A.5 The hospital continually extends its existing capabilities, through accessing additional new types of knowledge.	.778	
A.6 The hospital continually makes new uses and arrangements of existing knowledge to form new types of capabilities.	.750	
A.2 Access and integration of a diverse collection of individual specialised knowledge is one of the fundamental efforts undertaken by the hospital to form organisational capabilities.	.678	
A.10 The trust is effective in building linkages and sharing resources across locations and departments.		.895
A.8 The hospital is capable of co-ordinating and integrating quickly and efficiently various resources within the trust and/or with other trusts.		.736
A.12 Sufficient resources are allocated to find an effective solution that can be quickly implemented, to problems when these arise.		.665
A.11 Symptoms of Problems are Identified Quickly.		.652
A.7 Broad networks, which allow the transfer/sharing of specialised knowledge, link our hospital and/or professional staff with their counterparts.		.500
A.9 The hospital forges collaborative relationships and networks with other organisations		.473
A.1 The hospital continually develops, adapts, and renews its skills and competencies to respond to changes in the requirements of stakeholders.	.357	.377

Extraction Method: Principal Component Analysis.
 Rotation Method: Oblimin with Kaiser Normalization.
 Rotation converged in 8 iterations.

Table 6.1: Exploratory Factor Analysis for the “Dynamic Capabilities” Construct.

The internal consistency reliability coefficient measures (Cronbach's alpha) for the main construct (Dynamic Capabilities) and the two resulting factors (DINTKNWL and DCOORRES) were 0.88, 0.8649 and 0.8013, respectively. All these measures indicate very good levels of reliability for each of these constructs, since the recommended minimum acceptable level for Cronbach's alpha measuring reliability is 0.60, as advised by Hair et al. (1998).

To summarise, the results of the EFA have shown that the items measuring the main Dynamic Capabilities construct loaded significantly on two main factors, which are: DINTKNWL and DCOORRES. Also, the results of the internal consistency reliability test have shown that Cronbach's alpha for these two new resulting constructs / factors indicated that they are reliable. Therefore, based on the results of these two statistical tests, the next step is to represent the Dynamic Capabilities construct by two separate dimensions. These are:

1. Dynamic Integration of Knowledge (DINTKNWL), by a summed variable measured by the items (A.2, A.3, A.4, A.5, A.6).
2. Dynamic Co-ordination of Resources (DCOORRES), by a summed variable measured by the items (A.7, A.8, A.10, A.11, A.12).

The results of the Factor Analysis discussed above, represented by the emergence of the two aforementioned constructs related to dynamic capabilities, provide strong support for the two main sets of practices reflecting the use of dynamic capabilities within organisations, in terms of both: renewing organisational capabilities through the effective integration of its knowledge bases, as well as co-ordinating and sharing resources within the organisation and across other organisations, in response to any change.

6.2.2 Operationalisation and Measurement of the “Leadership and Change Management” Construct

In a study conducted by the Human Resource Planning Society, Wright et al. (1999) have indicated that one of the main findings emerging from the study point to the major challenges that will be affecting organisations in the years ahead. The most prominent of these challenges, they explain, will emanate from the rapid and

unrelenting pace of changes in the external environment, and the often unpredictable ways in which such changes can affect organisations. Under such increasingly dynamic and unpredictable circumstances, Wright et al. (1999) have indicated that the bureaucratic organisational paradigm clearly suffers as a guiding paradigm for organisations operating in turbulent and fluid environments characterised by constant change. A solution recognised by the study is to work toward developing a new guiding paradigm: the agile organisation. Thus, in order to enhance organisational agility, respondents to the study envisioned the development of people-driven systems, backed by three main organisational capabilities; the first of which is visionary and supportive leadership. The study stressed the need for organisations to configure these people-driven systems in ways that enhance speed, flexibility, and agility. In order to foster a new leadership style for agile organisations, substituting the leadership styles often found in traditional bureaucracies, Wright et al. (1999) emphasise three main practices. These entail managers in leadership positions to spend most of their time promoting the organisational vision, setting broad strategic direction, as well as coaching and communicating.

Hitt et al. (1998) argue that effective strategic leadership is required from organisations in order to be able to survive in the new environmental reality of the 21st century, characterised by dynamism, uncertainty and unpredictability. They indicate, in the course of discussing the main enablers of strategic flexibility, that the first of these enablers, and perhaps the most important, is exercising effective strategic leadership on the part of members of the top management team / strategic leaders of the organisation, in a manner that is suitable for managing in dynamic environments.

Such effective leadership in dynamic environments entails exercising both: visionary as well as transformational leadership skills. Visionary leadership entails being able to develop a vision for the organisation, which organisational members can embrace, while at the same time, being a catalyst for change. This becomes more urgent in dynamic environments, since the rapidity of changes can have a demoralising effect upon the people working in the organisation and, thus, become more in need of direction and purpose that can unify and motivate them.

Embedding core values and gaining the commitment of staff towards them, thus, has a motivating effect in an environment where continuous change and response to it can have demoralising effects. For instance, in a case study of a leading American Healthcare Network Organisation, Shafer et al. (2001) identified the main human resource initiatives and steps taken by the organisation to foster the successful attainment of organisational agility. The first two of these initiatives were: achieving *contextual clarity* and *embedding core values*. The principal aims behind these two initiatives were indicated to centre on the following:

1. To assure that employees at all levels clearly understand: The Chief Executive's vision for the organisation; The organisation's progress towards achieving the vision; The links between their individual and collective actions and the performance of the organisation as a whole. The benefit accruing from this is that a firm grasp of environmental and organisational realities would serve to enhance employees' dedication to the organisation's overall agility and success.
2. To assure that all employees know about, understand, share and live the core values. The benefit accruing from shared core values is that in periods of constant change, the importance of having shared values increases as they are used by people to establish a common ground and as a basis to build trust. Also, a firm set of core values uniformly applied would encourage employees to identify with the organisation as a whole and thus to be more business-driven and more comfortable in acting independently and taking personal responsibility.

In addition, Hitt et al. (1998) have stressed that the Top Management Team in the organisation is also required to be effective in managing change. An important characteristic of such an effective management of change is to strike a balance between long-term, incremental change (long-term transformations), and short-term performance. The importance of maintaining such a balance is due to the reason that managing in continuously changing conditions may influence management to lose sight of the need to make small, day-to-day changes. Also, the ability to galvanise and gain the commitment of members of the organisation towards effecting continuous change and improvement is equally important. This leads to the other kind of leadership skills, which are transformational ones.

Transformational skills are concerned with obtaining the commitment of members of the organisation to achieving its vision and objectives. This places emphasis on the ability of the Top Management Team to effectively navigate the organisation in turbulent conditions. Therefore, the characteristics of such a management team are deemed extremely influential in directing and steering the organisations in the face of continuous change. A heterogeneous / diverse management team, with varied expertise and knowledge is argued by Hitt et al. (1998) to be more likely to identify environmental changes quickly, as well as more able to develop the appropriate strategies when dealing with new direction in the operation of the organisation. This is due to the multiplicity of knowledge and expertise bases, which can provide a wider exposure to the nature of the business, in which the organisation is operating. Emanating from such characteristics of the Top Team is the need to possess superior knowledge of the industry / sector of operation, as well as the ability to build effective relationships with key parties or stakeholders, who directly or indirectly affect the operation of the organisation.

Another dimension of such transformational skills required from top management teams leading in dynamic environments is to develop and invest in the human capital of the organisation, in order to continuously adapt and renew their skills and knowledge so as to be able to deal with whatever uncertainties their working environment brings. This includes fostering a learning environment, training and development, care in designing recruitment policies, etc.

Based on this discussion seeking to identify the characteristics of effective leadership in agile organisations, items B.1-B.11 were designed and included in the self-completion questionnaire, in measuring the construct of *Leadership and Change Management*. Items B.1-B.3 reflected visionary leadership and effective change management. Items B.4-B.8 focused on the characteristics required from Top Management Teams leading in dynamic environments. Finally, items B.9-B.11 represented activities related to fostering and building the human capital of the organisation, as part of the skills required from Top Management Teams leading in dynamic environments. The items measuring the “Leadership and Change Management” construct were subjected to Exploratory Factor Analysis (EFA), using principal component analysis as the extraction method, included as part of the

statistical applications provided by the “Statistical Package for Social Sciences” (SPSS) software package version 11. The results presented in table 6.2 confirmed the unidimensionality of this construct, in that all items loaded significantly on only one factor, and none of these had a loading that was less than 0.50. The loadings for the 11 items making up this construct ranged from 0.694 to 0.846. The total cumulative variance explained by the one factor representing this construct was 61.4%, and it had an eigenvalue greater than 1 (6.75). The Bartlett’s Test of Sphericity (537.527, $P < 0.001$) and Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0.919) indicated that conducting the Exploratory Factor Analysis (EFA) was appropriate and that it satisfied the conditions for using such a statistical technique. The construct was labelled “**Effective Leadership and Change Management**” (EFLDCHGM) and consisted of items (B.1-B.11).

Items and Measures Description	EFLDCHGM
B.11 Top Management Team (TMT) are intent on developing an organisational culture that promotes loyalty, commitment and cohesion among hospital members	.846
B.2 TMT are successful in maintaining a balance between: designing and implementing long-term transformations, while implementing short-term projects that show achievable results	.836
B.7 TMT possess high-level capability to build a learning environment	.825
B.1 Top Management Team are known for their effectiveness in developing a long-term vision for the organisation and communicating that vision to all levels in the organisation	.815
B.3 TMT are known for their effectiveness in encouraging and gaining commitment to continuous change and achieving vision	.801
B.4 TMT consists of members with varied sets of skills, experience and knowledge, which make it heterogeneous	.800
B.8 TMT possess high-level understanding & appreciation of tech. and its use	.792
B.10 TMT invest in training and development to continuously renew and regenerate individual as well as collective skills, capabilities & competencies.	.758
B.9 TMT invest appropriately to recruit and select top-quality organisational members	.719
B.5 TMT possess high-level knowledge of the healthcare service sector	.715
B.6 TMT possess high-level ability to build effective relationships with key stakeholders	.694

Extraction Method: Principal Component Analysis.

1 Component extracted.

Table 6.2: Exploratory Factor Analysis for the “Leadership and Change Management” Construct.

The internal consistency reliability coefficient measure (Cronbach's alpha) for the resulting unidimensional construct (EFLDCHGM) was 0.9366, indicating an excellent level of reliability for this construct, since the recommended minimum acceptable level for Cronbach's alpha measuring reliability is 0.60, as advised by Hair et al. (1998).

Therefore, based on both: the result of the EFA, in that items measuring the main construct loaded significantly on one, unidimensional factor (EFLDCHGM), as well as the result of the internal consistency reliability test, in that Cronbach's alpha for this new resulting construct / factor indicated excellent reliability, the next step was to represent the "Effective Leadership and Change Management" (EFLDCHGM) construct by a summed variable, measured by the items (B.1-B.11).

6.2.3 Operationalisation of the "Leeway in Organisational Structure" Construct

A number of attributes describing the characteristics of organisational structures in agile organisations were identified from the extant literature. The focus was on delineating those dimensions, which are suggested to facilitate rapid response to change, as well as minimise the inhibiting effects of the traditional bureaucratic organisation. Such dimensions include:

- Flat, horizontal Structures
- Cross-functional teams.
- Empowerment, decentralised authority and decision-making.
- Job enrichment.
- Performance-oriented reward and recognition systems.
- Effective, lateral, and informal communication.
- Informal, coaching and encouraging management style.

These dimensions have come to characterise the modern *horizontal, organic, organisational structures*, which cut down hierarchical levels and seek to integrate various functional departments and levels across the organisation. These structures represent a shift from the old, traditional bureaucratic paradigm of the organisation, with all the attributes attached to it, in terms of formal management style, centralisation of power and authority, and lack of empowerment.

Thus, non-bureaucratic organisational structures are more favourable to agility, since *“the traditional bureaucratic organisational structure is, inherently, non-agile as it depends upon predetermined rules to guide behaviour”* (Meredith and Francis, 2000, pp. 141-142). Instead, flat, less hierarchical structures of the organisations of today and the future are argued to be more qualified to embody the attributes of modern management, which are represented by the dimensions earlier listed (Strachan, 1996).

In this context, Hitt et al. (1998) have argued that the requirements of today’s ever-changing environment have lessened the value of traditional, vertical, and hierarchical organisational structures. This is due to the reason that such vertical structures tend to be slow in developing and implementing decisions, and less facilitative of innovation. Instead, the focus has shifted towards developing flatter and more horizontal as well as decentralised and flexible structures, to enhance innovation and speed of strategic decisions. They argue that horizontal structures can improve the agility of an organisation *“by making it more innovative and by facilitating the development and implementation of strategic actions rapidly. Speed and innovation should help the organisation be more responsive to environmental changes and demands”* (Hitt et al., 1998, p. 36).

Consistent with this are the two notions coined by Peters and Waterman’s (1982) *“loosely-managed and flatter organisations”*, and Kanter’s (1983) *“integrative organisational types”*. Volberda (1996, 1997) also promotes flexible organisational forms, which can respond to a wide variety of changes in the environment in an appropriate and timely way. He indicates that such organic forms of organising, which are adapted to highly complex and dynamic environments, have been earlier examined by a well-established stream of research in contingency theory, mainly consisting of Burns and Stalker (1961), Lawrence and Lorsch (1967), Thompson (1967), and Duncan (1972).

Such new structures are facilitated, and thus, characterised, by a number of facets: -

- For instance, Hitt et al. (1998) quote the benefit of using formal integrating mechanisms, as advocated by Ancona and Caldwell (1992), Hitt et al. (1993), and Woodman et al. (1993). Such integrating mechanisms include the use of boundary spanners, task forces, teams, integrating committees / departments, and

sophisticated information networks, which are believed to increase the breadth, frequency and quality of information shared across functional specialties and units.

- Emanating from these mechanisms is the emphasis on developing cross-functional teams, which integrate the different knowledge and expertise backgrounds of team members from across the organisation. Such diversity in competencies is suggested to enhance innovation, as well as improve communication, productivity and, thus, the quality and speed of action.

- Another aspect of the horizontal organisation is the “process-based” structure, which is based on structuring the organisation around core business processes. Such a philosophy is particularly advocated by the proponents of Business Process Re-engineering / Redesign (BPR), particularly Hammer and Champy (1995), with various experiences in healthcare organisations, perhaps the most prominent of which in the UK is the redesign of patient processes at Leicester Royal Infirmary. Also, Garvin (1995, 1998) coins the term “process owners” to refer to managers being increasingly responsible for managing particular work processes, rather than purely functional departments.

- Wright et al. (1999) indicate that a solution to today’s turbulent environmental reality affecting organisations is the development of a new guiding paradigm: the agile organisation. They suggest that in order to enhance organisational agility, people-driven systems should be developed, backed by three main organisational capabilities: New leadership style, demolishing barriers to resource mobility, and enhancing the quality of information as well as self-organisation. In particular, Wright et al. (1999) highlight that removing barriers to resource mobility is often considered an important feature of the kind of organisational structures promoted for the agile organisation. Based on this, they emphasise two points:
 - a. Agile organisations require an easy flow of resources (ideas, money, information, people) across boundaries that traditionally separate organisational layers and functions and even organisations themselves.

- b. Also, employees at all levels must think of themselves as owners of fluid assignments who are responsible for achieving agreed-upon results, by doing whatever is required.
- Empowerment, decentralisation, effective communication, and job enrichment have quite often been mentioned together, so as to reflect a management philosophy that believes in human resources as the real sources of power and drive for any organisation. Such a philosophy promoting employee empowerment and autonomy in decision-making have been mentioned time and again in agility-related literature as being an essential cornerstone in the agile organisation (Goldman and Nagel, 1993; Gehani, 1995; Sharifi and Zhang, 1999; Yussuf et al., 1999; Breu et al., 2001; Van Oyen et al., 2001). Wright et al. (1999) consider empowering members of the organisation to make decisions in ever-broadening spheres of influence as a prerequisite for attaining maximum agility. This is due to its effect in speeding decision-making, through allowing people to act and react immediately rather than having to be restricted by bureaucratic and rigid procedures.

In this context, *“broadening spheres of decision-making enhances organisational learning because it encourages the sharing of tacit knowledge among employees who become increasingly dependent on one another’s performance”* (Wright et al., 1999, p. 15). Based on this, Wright et al. (1999) indicate that the essence of empowerment is having an entire workforce of individuals, who perceive themselves as owners of fluid assignments with responsibility for doing whatever it takes to achieve desired organisational results. Moreover, Based upon the preliminary findings of the Agile Manufacturing Research Group (AMRG), Meredith and Francis (2000) explain that an agile organisation requires rapid and frequent decision-making, particularly at the point of action involving middle and first-line managers. Therefore, there is a pressing need for an effective decision support and communication system to be in place, in order to support agility.

Finally, organisational structures become less formal in organisations operating in highly volatile environments. As Covin and Slevin (1989) argue, management’s control style becomes less strict in adhering to formal authority; less emphasis is

placed upon holding to tried and established work practices and procedures; and more dependence on informal relationships and co-operation among the workforce becomes the norm. Khandwalla (1977) developed a scale consisting of seven questions, which seek to measure the extent to which the management philosophy in the organisation is considered informal. Subsequently, such a scale was used as the basis for measuring the style of management and control in the NHS Trusts involved in this research.

Based on the attributes, which have been identified in the above discussion as characterising organisational structures in agile organisations, items C.1-C.20 were designed and included in the self-completion questionnaire, in order to measure the agility-enabling construct of *Leeway in Organisational Structure*.

- Items C.1-C.6 and item C.11 reflect the attributes of horizontal, organic structures.
- Items C.7-C.10 and items C.12-14 reflect empowerment, delegation of authority and decision-making, as well as lateral communication.
- Items C.15-C.20 reflect informal, coaching management style.

The items measuring the “Leeway in Organisational Structure” construct were subjected to Exploratory Factor Analysis (EFA), using principal component analysis as the extraction method, included as part of the statistical applications provided by the “Statistical Package for Social Sciences” (SPSS) software package version 11. The results presented in table 6.3 indicate that five factors emerged from this analysis. Factor 4 was excluded because it has a single item loading (item C.15); a decision that is consistent with the guidelines adopted in conducting and interpreting the outcomes of EFA, explained in the previous chapter, in that single item and/or unreliable factors are discarded, as retaining them, according to Nunnally (1978), is neither appropriate nor parsimonious. In addition, the correlation matrix used as the basis for the EFA shows that this item (C.15), which loaded on factor 4, did not have significant correlations with the other items measuring the “Leeway in Organisational Structure” construct.

Therefore, based on these two reasons, it is believed that it would be imprudent not to exclude such a factor from any further analysis. Furthermore, item C.2 was deleted because of its insignificant loading of 0.418, which is less than the minimum

acceptable level of 0.50, and item C.8 was disregarded because of its two insignificant cross loadings on factors 1 and 2, which are 0.439 and 0.488, respectively.

The remaining four factors, which satisfied the minimum loading of 0.50 that is acceptable for retaining items within each factor, are labelled as follows: -

- “**Horizontal Organic Structure**” (**HORGSTRU**) consists of items (C.3, C.4, C.5, C.6, C.7),
- “**Decentralisation of Authority and Decision-Making**” (**DECENTRA**) consists of items (C.1, C.9, C.10, C.11, C.12, C.13, C.14),
- “**Informal style of Management**” (**INFORMAL**) consists of items (C.18, C.19, C.20), and
- “**Disregarding Formal Authority**” (**DISAUTHOR**), which consists of items C.16, C.17).

All loadings for these four resulting factors were greater than 0.50, and they ranged from 0.517 to 0.877. The total cumulative variance explained by these factors was 61.9%, and each factor had an eigenvalue greater than 1. The Bartlett’s Test of Sphericity (795.124, $P < 0.001$) and Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0.802) indicated that conducting the Exploratory Factor Analysis (EFA) was appropriate and that it satisfied the conditions for using such a statistical technique. The internal consistency reliability coefficient measures (Cronbach’s alpha) were as follows: -

- The overall construct of “Leeway in organisational Structure”: 0.8952,
- The first factor of “**Horizontal Organic Structure**” (**HORGSTRU**): 0.8366,
- The second factor of “**Decentralisation of Authority and Decision-Making**” (**DECENTRA**): 0.8790,
- The third factor of “**Informal style of Management**” (**INFORMAL**): 0.7827, and
- The fourth factor of “**Disregarding Formal Authority**” (**DISAUTHOR**): 0.5611.

The measures for the overall construct, as well as for the first, second and third factors indicate very good levels of reliability for each of these constructs, since the recommended minimum acceptable level for Cronbach’s alpha measuring reliability

is 0.60, as advised by Hair et al. (1998). However, Cronbach's alpha for the fourth factor (**DISAUTHOR**): 0.5611 is below the aforementioned recommended acceptable level. Bearing such a low reliability score in mind, as well as taking into consideration the following:

First, that this factor consists of only two items (C.16, C.17);

Second, that the loadings of these two items comprising this factor are fairly low (0.598 and 0.665); and

Third, that the content of such items comprising this factor (factor 4), which primarily seek to measure whether there is strict adherence to formal authority or whether lines of formal authority are bypassed, are reflected in as well as expressed through other items, such as those items comprising the third factor of **“Informal style of Management” (INFORMAL)** [C.18, C.19, C.20]; it was decided that it would be prudent to disregard the fourth factor, in order to maintain consistency, rigour and reliability in operationalising as well as measuring the “agility-enabling” constructs. The total cumulative variance explained by the remaining three factors became 56.5%.

To conclude, based on both: the results of the EFA, as well as results of the internal consistency reliability test (Cronbach's alpha), three main “agility-enabling” factors / constructs have emerged from the main construct of “Leeway in organisational Structure”. These are:

- **“Horizontal Organic Structure” (HORGSTRU)**, which is measured by five items (C.3, C.4, C.5, C.6, C.7),
- **“Decentralisation of Authority and Decision-Making” (DECENTRA)**, which is measured by seven items (C.1, C.9, C.10, C.11, C.12, C.13, C.14),
- **“Informal style of Management” (INFORMAL)**, which is measured by three items (C.18, C.19, C.20).

Items and Measures Description	HORGSTRU	DECENTRA	INFORMAL	Factor 4	DISAUTHOR
C.6 Different resources (ideas, money, info, people, knowledge) flow easily across boundaries that traditionally separate organisational layers and functions	.797				
C.7 People working in the hospital increasingly think of themselves as owners of fluid assignments with responsibility for doing whatever it takes to achieve desired organisational results	.794				
C.4 Managerial attention and support is provided to the teams and their members	.755				
C.3 People working in the hospital are primarily rewarded and recognised according to their performance	.699				
C.5 Co-ordination & co-operation among the different departments are facilitated through integrating mechanisms: boundary spanners, task forces, teams, integrating committees/departments, & sophisticated info networks	.621				
C.14 The management philosophy in the hospital is such that it favours open channels of communication, with important financial and operating information flowing quite freely throughout the organisation		.871			
C.12 Decisions are communicated on a continuous basis and without delay to all people working in the hospital		.710			
C.13 Line staff and people working in lower levels are quite able to bring issues to the attention of those responsible		.671			
C.1 Teams are developed and selected from individuals with different perspectives, and from different functional areas	.441	.634			
C.9 The authority to take decisions is distributed and devolved throughout the various levels of the hospital's organisational structure, with real autonomy given	.437	.614			
C.10 Everyone working in the hospital is increasingly empowered to make decisions in ever-broadening spheres or areas of responsibility and influence	.420	.611			
C.11 Key managers/clinical directors are increasingly becoming responsible for managing core healthcare delivery processes rather than purely functional departments	.466	.517			
C.8 People (clinicians, managers, nurses, therapists) working within middle and lower levels are quite often given the authority to deal with their own problems	.439	.488			
C.18 There is a strong emphasis in the hospital on getting things done, even if this means disregarding formal procedures			.877		
C.19 The management philosophy in the hospital is such that it favours loose, informal control; heavy dependence on informal relationships and co-operation for getting work done			.827		
C.20 There is a strong tendency in the hosp to let requirements of the situation and the individual's personality define proper on-job behaviour, rather than adhering closely to formal job descriptions			.730	.427	
C.15 Managers' operating styles within the hospital do not follow a uniform style, but range freely from the very formal to the very informal				.889	
C.17 There is a strong emphasis in the hospital on holding to changing circumstances without too much of concern for the past practice					.665
C.16 There is a strong tendency in the hospital to let the expert in a given situation have the most say in decision-making, even if this means temporary bypassing of formal line authority.		.414			.598
C.2 The hospital is increasingly being structured around key/core healthcare delivery processes	.418				-.483

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 7 iterations.

Table 6.3: Exploratory Factor Analysis for the “Leeway in Organisational Structure” Construct.

6.2.4 Operationalisation of the “Leeway in Organisational Culture” Construct

A number of attributes describing the characteristics of the kind of organisational culture facilitative of organisational agility were identified from the extant literature. The focus was on delineating those main dimensions, as well as set of beliefs and values, which are suggested to facilitate readiness to change, as well as rapid response to it, and alleviate certain characteristics of cultures deeply ingrained in the traditional bureaucratic, and static organisation. Such main dimensions include:

- a. Building a learning and innovative organisational culture.
 - b. Creating mindsets that embrace change and risk-taking behaviour.
 - c. Embedding a shared vision, as well as a set of core values at all levels in the organisation, through communication and gaining the commitment of individual members.
-
1. The area of organisational learning and the learning organisation has long been inextricably linked with the fields of organisational change and development. This is particularly illustrated through the contributions of Bennis (1969), French (1990), Senge (1990), Pedler (1991), and Strachan (1996). However, Garvin (1994) indicates that, recently, such ideas related to a basic commitment to learning and knowledge creation have gained increased popularity particularly in rapidly changing businesses / sectors. As a result, Strachan (1996) indicates that the area of organisational learning has witnessed a growing interest, particularly from organisations, academics as well as consultants concerned with transformational change in turbulent environments.

Such a link between continually changing environments and organisational learning has stemmed from the belief that the one lasting source of competitive advantage is knowledge (Quinn, 1993; Lei and Hitt, 1996; Grant, 1996a, 1996b). Thus, the continual building as well as renewal of such knowledge is indicated to be vital in enabling organisations to gain advantage in today’s dynamic and continuously changing environment. An important means to achieve the building and renewal of knowledge is through organisational learning. In this way, this concept of organisational learning, as Hitt et al. (1998) argue, has become a critical component of gaining advantage in dynamic environments that are characterised by the rapid

development and diffusion of new technology, the growing requirements for innovation and the need to respond to changing competitive conditions. Thus, the importance of organisational learning is mainly attributed to its primary purpose of knowledge creation, which is of paramount importance in today's increasingly dynamic environments.

Thus, Meredith and Francis (2000) consider continuous learning, through which knowledge is captured, as an important facet of the agile organisation. Based on such an important role of learning in agile organisations, Strachan argues, "*that to survive and prosper in today's turbulent and rapidly changing business environments, organisations may need to innovate and transform their traditionally managed and structured organisations into learning organisations*" (Strachan, 1996, p. 33).

With regard to identifying the types of learning that are practised in organisations, Argyris and Schon (1978), based on developing Bateson's (1973) work on the different types of learning, identify three main types of learning. Such types, as explained by Strachan (1996), include: a) "*single-loop*" learning, which is mainly based on error detection and correction within the existing set of rules and norms, b) "*double-loop*" learning, which refers to learning that challenges current operating assumptions, norms and values and which may involve deeper inquiry and questioning regarding existing organisational arrangements, and finally c) "*duetero-learning*", which is concerned with learning about learning. Of these types of learning, "***double-loop***" learning has been emphasised by a number of authors (Senge, 1990; Strachan, 1996; Perez-Bustamante, 1999) to be needed in turbulent business environments in which there is a need to learn, as well as adapt the ways of working in the organisation, in order to effectively respond to change.

Such an adaptation occurs under double-loop learning, as Perez-Bustamante (1999) explains, when errors are tracked down and corrected. However, what is different in the case of double-loop learning is that through the detection of errors, the organisation incorporates change in its fundamental rules and norms, involving action and behaviour. Then, the organisation puts into question the whole decision-making system and adapts itself to its new environment.

Based on the importance of organisational learning in dynamic environments, the focus is shifted towards building a culture of learning and innovation in an organisation. According to Hitt et al. (1998), this entails a number of activities, which mainly centre on *creating* new knowledge, *diffusing* it throughout the organisation, and finding ways to *capitalise* on it. These activities are identified as follows: -

- To build the capacity for continuous organisational learning, a supportive strategic architecture must be constructed. Strategic architecture has been defined as “*an overarching set of corporate values and priorities upon which specific strategies are built*” (Hitt et al., 1998, p.36). From this definition, it is concluded that particular emphasis is placed upon instilling strong values for learning in the organisation, if it is to become a truly learning organisation. In other words, an organisation considering transforming itself into a learning one should start such an effort first by inculcating the building of knowledge into its core values.
- In periods of dynamic change that quickly render a particular skill or core competence as irrelevant, Lei and Hitt (1996) argue that learning must involve the conceptualisation of different and contradictory forms of knowledge. In this context, Hitt et al. (1998) pay particular attention towards developing a programme to create non-linear thinking. An example they give is that of reviewing major decisions and actions by a group of knowledgeable managers.
- With regard to diffusion of knowledge, Perez-Bustamante (1999) emphasises that an essential component in agile innovative organisations is their ability to disseminate information and knowledge within the organisation, thus promoting a culture of change. In this context, Hitt et al. (1998) propose building a structure that is mainly concerned with diffusing knowledge throughout the organisation, by establishing jobs with the responsibility to spread best practices from one unit to another.
- Also, organisations can extend their learning capacity by finding partners with complementary knowledge bases and skills.

2. The second dimension, which characterises organisational cultures that can well facilitate an organisation's agile response to environmental changes, is concerned with creating mindsets that embrace and tolerate change, as well as accept risk-taking. Since the need for organisational agility is primarily triggered by environments experiencing constant and, often, unpredictable change, Wright et al. (1999) argue that members of an organisation are required to develop a matching mindset. In other words, a mindset that enables people working in the organisation to embrace change. This entails that:
 - Change is seen as not only invigorating but also as essential to organisational success.
 - Maintaining the status quo is viewed as detrimental to the survival and development of the organisation.
 - Tolerance to change is encouraged through continually motivating as well as supporting staff, particularly in periods of radical change regarding their ways of work and organisation.

3. The third dimension related to the culture of agile organisations, which plays a pivotal role in establishing a sense of purpose and focus for members of the organisation in turbulent conditions, is concerned with gaining commitment to a shared set of core vision and values. Since employees in agile organisations essentially operate with ill-defined goals, few rules, and broad assignments, communicating the organisation's vision and core values provides those employees with much-needed guidance and self-control. Therefore in this context, Wright et al. (1999) recommend taking the following actions: -
 - Ensuring that employees have access to all the information they need concerning the organisation's vision and core values. Employees who make use of this information are relatively well equipped to quickly and easily adjust their behaviours to anticipate and respond to the shifting needs of the environment.
 - Forging a sense of common purpose among employees, by promulgating a clear vision for the organisation and assuring that employees at all levels are kept abreast of the organisation's environmental realities.
 - Ensuring that the organisation's core values are clear, widely shared, and consistently adhered to.

The importance of communicating the organisation's vision, as well sharing its core values, has also been highlighted when discussing the role of visionary leadership in effectively managing organisations operating under dynamic and turbulent conditions. It was indicated then that embedding a set of core values and gaining the commitment of staff towards them, has a motivating effect in an environment where continuous change and response to it can have demoralising effects. Therefore, Shafer et al. (2001) explain that the benefit accruing from shared core values is that in periods of constant change, shared values are used to build trust. Also, a firm set of core values uniformly applied would also encourage employees to identify with the organisation as a whole and thus to be more business-driven and more comfortable in acting independently and taking personal responsibility.

Based on the attributes, which have been identified in the above discussion as characterising organisational culture in agile organisations, items D.1-D16 were designed and included in the self-completion questionnaire, in order to measure the agility-enabling construct of *Leeway in Organisational Culture*.

- Items D.1-D6 and item D.11 reflect the attributes of a learning and innovative organisational culture.
- Items D.7-D.10 reflect a culture of tolerance to change, thus reflecting a mindset that embraces change and accepts risk-taking.
- Items D.12-D.16 reflect activities concerned with establishing as well as embedding a shared vision, and a set of core values throughout the organisation.

The items measuring the “Leeway in Organisational Culture” construct were subjected to Exploratory Factor Analysis (EFA), using principal component analysis as the extraction method, included as part of the statistical applications provided by the “Statistical Package for Social Sciences” (SPSS) software package version 11. The results presented in table 6.4 indicate that four factors emerged from this analysis. Factor 4 was excluded because it has a single item loading (item D.6); a decision that is consistent with the guidelines adopted in conducting and interpreting the outcomes of EFA, as explained in the previous chapter, in that single item and/or unreliable factors are discarded, as retaining them, according to Nunnally (1978), is neither appropriate nor parsimonious. In addition, the correlation matrix used as the basis for

the EFA shows that this item (D.6), which loaded on factor 4, did not correlate positively at all with 12 of the 16 items measuring the “Leeway in Organisational Culture” construct, in that it had negative correlation coefficients with them, and that it had very small, insignificant, positive correlation coefficients with the remaining items, which were near to zero (except with itself since the correlation between an item and itself is always 1). Therefore, based on these two reasons, it is believed that it would be imprudent not to exclude such a factor from any further analysis.

Furthermore, item D.3 was deleted because of its insignificant loading of 0.478, which is less than the minimum acceptable level of 0.50, and item D.9 was disregarded because of its three insignificant cross loadings on factors 2, 3, and 4, which are 0.483, 0.497, and 0.429, respectively.

The remaining three factors, which satisfied the minimum loading of 0.50 that is acceptable for retaining items within each factor, are labelled as follows: -

- **“Commitment to Shared Vision and Values” (CTSHVNVL)** consists of items (D.12, D.13, D.14, D.15, D.16),
- **“Learning and Innovative Organisational Culture” (LEARNORG)** consists of items (D.1, D.2, D.4, D.5, D.7, D.11), and
- **“Tolerance to Change” (TOLCHANG)** consists of items (D.8, D.10).

<i>Items and Measures Description</i>	CTSHV NVL	LEARNO RG	TOLCH ANG	Factor 4
D.15 The hospital's core values are clear, widely shared, and consistently adhered to	.835			
D.14 Every effort is made to agree on and communicate a clear vision for the hospital to all levels	.814			
D.13 Most of the people working in the hospital are convinced of what is required from them to deliver	.792			
D.16 Every effort is made to assure that everybody has access to all the information they need concerning the hospital's vision, core values, as well as its current and desired performance targets	.733			
D.12 People working in the hospital are committed to a shared vision and shared values, which motivate them	.650	.412		
D.5 The hospital always seeks to extend its learning capacity, as an organisation, by finding partners with complementary knowledge bases and skills		.779		
D.4 The hospital encourages learning that challenges current operating assumptions, norms and values as well as organisational arrangements		.754		
D.2 There are strong values for learning and converting new knowledge into skills and competencies in this hospital		.731		
D.11 The hospital focuses on and invests in building and developing general skills, including communication, problem solving and decision-making	.410	.709		
D.7 Change is seen as not only invigorating but also as essential to organisational success		.634		
D.1 The hospital continuously reviews major decisions and actions, by a group of knowledgeable clinicians and/or managers	.423	.558		
D.3 There is a structure in place, which diffuses knowledge throughout the organisation (e.g. jobs with the responsibility to spread best practices from one unit to others)		.478		
D.10 There is a high level of tolerance to change in the hospital			.905	
D.8 The idea that "everything is, and has to be, open for change", is widely shared and embraced among people working in the hospital	.454		.550	
D.9 Maintaining the status quo and doing things as usual is the norm in the hospital		.483	.497	.429
D.6 The hospital's investments in skills development are mainly limited to those skills and competencies that are closely related to the nature of healthcare services it provides				.893

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 5 iterations.

Table 6.4: Exploratory Factor Analysis for the “Leeway in Organisational Culture” Construct.

All loadings for these three resulting factors were greater than 0.50, and they ranged from 0.550 to 0.905. The total cumulative variance explained by these factors was 61.3%, and each factor had an eigenvalue greater than 1. The Bartlett’s Test of Sphericity (646.465, $P < 0.001$) and Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0.878) indicated that conducting the Exploratory Factor Analysis (EFA) was appropriate and that it satisfied the conditions for using such a statistical

technique. The internal consistency reliability coefficient measures (Cronbach's alpha) were as follows: -

- The overall construct of “Leeway in organisational Culture”: 0.9083,
- The first factor of “**Commitment to Shared Vision and Values**” (CTSHVNVL): 0.8831
- The second factor of “**Learning and Innovative Organisational Culture**” (LEARNORG): 0.8624,
- The third factor of “**Tolerance to Change**” (TOLCHANG): 0.6166.

The measures for the overall construct, as well as for the first, second and third factors indicate very good levels of reliability for each of these constructs, since the recommended minimum acceptable level for Cronbach's alpha measuring reliability is 0.60, as advised by Hair et al. (1998).

To conclude, based on both: the results of the EFA, as well as results of the internal consistency reliability test (Cronbach's alpha), three main “agility-enabling” factors / constructs have emerged from the main construct of “Leeway in organisational Culture”. These are:

- “**Commitment to Shared Vision and Values**” (CTSHVNVL), which is measured by five items (D.12, D.13, D.14, D.15, D.16),
- “**Learning and Innovative Organisational Culture**” (LEARNORG), which is measured by six items (D.1, D.2, D.4, D.5, D.7, D.11), and
- “**Tolerance to Change**” (TOLCHANG), which is measured by two items (D.8, D.10).

6.2.5 Operationalisation of the “Leeway in Technology” Construct

Consistent with the approach followed in developing the items measuring the previous “agility-enabling” constructs, the focus in operationalising the “Leeway in Technology” construct was also on identifying the dimensions of technology that allow the organisation to react and respond effectively to external change. Three main dimensions related to technology were identified: -

- a. Enhancing information sharing, dissemination, and accessibility across the organisation, through employing effective support for an organisation's information systems, represented by the use of Information Technology (IT).
 - b. Making effective use of new technology (i.e. Information Technology, as well as Medical Technology reflected in equipment, and methods of diagnosis and treatment).
 - c. Embedding positive attitudes towards information and knowledge in the organisation, which mainly centre on considering information and knowledge as resources to be openly shared, as well as sources of organisational rather than personal power. This is suggested to support horizontal information sharing across the organisation, which is consistent with the new agile organisation paradigm.
- Hitt et al. (1998) have indicated that the critical domain for new technology application is information (and communication) technology. In fact, innovations in information systems may be used in gaining a competitive advantage. While much emphasis has been placed on vertical information systems, organisations must also develop and utilise horizontal information systems to help co-ordinate activities across units, locations and departments. Such co-ordination is particularly important in organisations that have adopted horizontal structures. Such information provision can aid organisations in making faster and higher quality strategic decisions. In addition, such an information system essentially helps co-ordinate and share the organisation's collective knowledge across different departments and locations, as expressed by Boynton (1993).

Therefore, Breu et al. (2001) supports the argument made by Miles et al. (1997), as well as Kraut et al. (1998), in that an appropriately designed IT infrastructure allows the creation of structures that are fluid, flexible and adaptive to dynamic environments. It also contributes to speed of action by providing real-time and remote access to organisational information and knowledge resources, as well as improving the timeliness of management information, as explained by Strader et al. (1998). Based on this, the increasing knowledge intensity present in today's dynamic environment requires the effective use of information technology to support managerial operations and innovation.

With regard to ensuring and enhancing the sharing, dissemination, and accessibility of information and knowledge throughout all levels in the organisation, Wright et al. (1999) emphasise the importance of such a diffusion of information in agile organisation. They argue that agile organisations run on real-time, easily accessible information, which is up-to-date, accurate, available to every employee, and that covers the business environment, strategic direction, as well as actual performance of the organisation and its achievement of its set objectives. Also, in agile organisations, it is up to each person to determine his/her own needs of information, rather than being overwhelmed with often irrelevant material, as indicated by Wright et al. (1999).

- Hitt et al. (1998) recommend that organisations adopt the following activities, in order to ensure the effective use of technology on their part. These activities include:
 - Regularly *identifying* the newest and most effective technology relevant to the business / sector, in which the organisation operates. This includes information technology, as well as technology related to the nature of the organisation's operational activities, such as technology reflected in medical equipment, methods of diagnosis and treatment, for example.
 - Making a *commitment* to seek the newest and best technology and update skills required to use such technology.
 - *Allocating* necessary resources to seek the acquisition and implementation of up-to-date and best technology available.
- In addition, such a knowledge-intense environment requires new attitudes towards information and knowledge that are consistent with sharing information and knowledge horizontally, across all levels in the organisation. Wright et al. (1999) strongly emphasise the importance of such attitudes, which require a mindset that views information and knowledge as potential sources of organisational rather than personal power, and as sources to be openly shared rather than selectively deployed. Thus, such attitudes transcend the confinements of functional interests or silos and, instead, adopt a spirit of co-operation and integration across departmental / functional boundaries. This reflects a culture of openness and trust, without which, it becomes quite difficult

for employees to take the initiative as well as take action in response to an increasingly volatile environment.

Based on these identified dimensions, concerned with characteristics of technology application in agile organisations, items E.1-E.9 were designed in order to enable the measurement of the “Leeway in Technology” construct.

- Items E.1-E.2, E.4-E.7, and item E.9 measure the extent to which the NHS Trusts make effective use of technology, whether that is related to information technology or medical equipment.
- Items E.3 and E.8 measure the attitudes towards information and knowledge, which reflect the underlying culture of information sharing and dissemination.

The items measuring the “Leeway in Technology” construct were subjected to Exploratory Factor Analysis (EFA), using principal component analysis as the extraction method, included as part of the statistical applications provided by the “Statistical Package for Social Sciences” (SPSS) software package version 11. The results presented in table 6.5 indicate that two factors emerged from this analysis. The first factor was labelled “**Effective Provision of Information and Technology**” (**EFPROINF**) and consisted of items (E.1, E.2, E.4, E.5, E.6, E.7, E.9), whereas the second factor was labelled “**Open Attitude Towards Information and Knowledge**” (**ATINFOKN**) and consisted of items (E.3, E.8). Item E.1 had cross loadings on factors 1 and 2, which were greater than 0.50. However, this item has been retained as part of the first factor emerging from EFA. This is due to the following reasons:

1. Item E.1 had a loading of 0.640 on factor 1, compared with a loading of only 0.518 on factor 2.
2. When the internal consistency reliability coefficient measure (Cronbach’s alpha) was calculated for factor 1, Cronbach’s alpha was greater when item E.1 was included as part of that factor (0.8888), than when item E.1 was excluded (0.8670). This provided an indication that the reliability of factor 1 is enhanced when item E.1 was included in measuring such a factor.
3. Also, the content of item E.1, which seeks to measure whether the newest and most effective technology is regularly identified by the NHS Trusts, is consistent and homogeneous with items E.4 and E.9 that loaded on the same factor (factor 1). Such items are also concerned with measuring whether the Trusts are

committed to acquiring, as well as allocating the necessary resources to acquire and implement such effective technology.

Based on these reasons, it was decided that it would be prudent to include item E.1 as part of those items measuring factor 1: “**Effective Provision of Information and Technology**” (EFPROINF).

<i>Items and Measures Description</i>	EFPROIN F	ATINFOKN
E.5 Quality, timely, accurate and valid information is provided on a continuous basis	.812	
E.9 The hospital allocates necessary resources (funding, skills) to acquire and implement up-to-date and best technology available (medical equipment, methods of diagnosis and treatment, IT	.810	
E.6 Information needed by any member of the hospital is easily accessible	.802	
E.2 The hospital employs and operates effective Information Technology (IT) support for its information systems (IS)	.765	
E.1 The newest and most effective technology (e.g. medical equipment, methods of diagnosis and treatment) that is relevant to the services delivered by the hospital is regularly identified	.640	.518
E.4 The hospital is committed to acquiring the newest and best technology (medical equipment, methods of diagnosis and treatment), and updating the skills to use and/or apply them	.551	.458
E.7 Members of the hospital have license to determine their own information needs rather than being overwhelmed with often irrelevant material	.540	.467
E.8 Information and knowledge are viewed as potential sources of organisational rather than personal power		.886
E.3 Information and knowledge are considered and viewed as resources to be openly shared rather than selectively deployed	.483	.618

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 3 iterations.

Table 6.5: Exploratory Factor Analysis for the “Leeway in Technology” Construct.

All loadings for the two resulting factors were greater than 0.50, and they ranged from 0.540 to 0.886. The total cumulative variance explained by these factors was 64.5%, and each factor had an eigenvalue greater than 1. The Bartlett’s Test of Sphericity (332.307, $P < 0.001$) and Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0.842) indicated that conducting the Exploratory Factor Analysis (EFA) was appropriate and that it satisfied the conditions for using such a statistical technique. The internal consistency reliability coefficient measures (Cronbach’s alpha) were as follows: -

- The overall construct of “Leeway in Technology”: 0.8863,
- The first factor of “**Effective Provision of Information and Technology**” (**EFPROINF**): 0.8888,
- The second factor of “**Open Attitude Towards Information and Knowledge**” (**ATINFOKN**): 0.60.

The measures for the overall construct, as well as for the first and second factors indicate acceptable to very good levels of reliability for each of these constructs, since the recommended minimum acceptable level for Cronbach’s alpha measuring reliability is 0.60, as advised by Hair et al. (1998). In general, for exploratory research, the minimum levels of acceptable reliability are usually set to be ranging from 0.50-0.60, as indicated by Nunnally (1978).

To conclude, based on both: the results of the EFA, as well as results of the internal consistency reliability test (Cronbach’s alpha), two main “agility-enabling” factors / constructs have emerged from the main construct of “Leeway in Technology”. These are:

- “**Effective Provision of Information and Technology**” (**EFPROINF**), which is measured by seven items (E.1, E.2, E.4, E.5, E.6, E.7, E.9),
- “**Open Attitude Towards Information and Knowledge**” (**ATINFOKN**), which is measured by two items (E.3, E.8).

6.2.6 Operationalisation of the “Environmental Scanning” Construct

There has always been a need for organisations to scan their environment and interpret its dynamics (Weick, 1969). Such a need for environmental scanning is explained by the complexity and change inherent in the environment, which Galbraith (1973) indicates necessitate the need for information in order to reduce environmental uncertainty and aid strategic planning. Meredith and Francis (2000) highlight the strategic importance of environmental scanning, in the course of explaining the two major aspects of agility. They argue that there are two interdependent aspects of agility: strategic and operational. At the strategic level, an outward-looking approach is required. The main activities characterising such an outward-looking approach include scanning the environment and assessing the likely impact of a number of trends occurring in the factors inherent in such an environment.

Such scanning, which Meredith and Francis (2000) refer to as “wide-deep scanning”, relates to the procedures followed in gathering intelligence from the external environment represented by multiple factors, including other organisations’ strategies, technological developments, as well as political and economic changes.

- a. Since significant factors could occur anywhere, the need arises for **wide scanning**. In this context, Lindgren (2000) refers to “organisational scanning”, which he explains addresses the activities undertaken by the organisation in collecting information about its external environment. He employs a multi-item scale to measure such an extent of organisational scanning, which was previously used by Sutcliffe (1994), based on Glick et al. (1990) and Fahey and King (1977). Based on this, such a scale was used in this research, after adapting the wording of its items to suit the context of healthcare organisations, to measure the “**wide scanning**” activity of environmental scanning. This is represented by the organisational scanning activities undertaken by the organisation in order to collect intelligence about its external environment.

- b. After detecting the most significant environmental factors affecting the organisation, Meredith and Francis (2000) explain that these factors then have to be fully analysed, hence the need for **deep scanning**. The detection of the most significant environmental factors normally entails classifying their effects as either an opportunity or a problem/threat. In this context, Lindgren (2000) refers to “comprehensiveness”, which he defines as “*the extent to which an organisation when confronted with an important non-routine problem or opportunity tends to extensively examine alternative explanations and solutions*” (Lindgren, 2000, p. 120). He uses a multi-item scale to measure such an extent of comprehensiveness, which was developed by Ogilvy and Glick (1990), reported by Glick et al. (1990), and recently used by Miller et al. (1998), and Lindgren (2000). Based on this, such a scale was used in this research, after adapting the wording of its items to suit the context of healthcare organisations, to measure the “**deep scanning**” activity of environmental scanning. This is represented by the comprehensiveness of the organisation in examining alternative explanations and solutions, when confronted with an important, environmental, non-routine problem or opportunity.

Based on this discussion, items F.1-F.11 were designed and included in the self-completion questionnaire, in order to measure the “Environmental Scanning” construct: Items F.1-F.6 measure “wide scanning”, whereas items F.7-F.11 measure “deep-scanning”. The items measuring the “Environmental Scanning” construct were subjected to Exploratory Factor Analysis (EFA), using principal component analysis as the extraction method, included as part of the statistical applications provided by the “Statistical Package for Social Sciences” (SPSS) software package version 11. The results presented in table 6.6 indicate that two factors emerged from this analysis. The first factor was labelled “**Deep Environmental Scanning**” (DEEPSCAN) and consisted of items (F.7, F.8, F.9, F.10, F.11), whereas the second factor was labelled “**Wide Environmental Scanning**” (WIDESCAN) and consisted of items (F.1, F.2, F.4, F.5, F.6). Item F.3 was deleted because of its insignificant loading of 0.434, which is less than the minimum acceptable level of 0.50 adopted in this research and supported by Hair et al. (1998).

Items and Measures Description	Factor 1	Factor 2
F.7 When confronted with an important, non-routine problem or opportunity, the hospital develops many alternative responses	.867	
F.9 When confronted with an important, non-routine problem or opportunity, the hospital thoroughly examines multiple explanations for the problem or opportunity	.823	
F.8 When confronted with an important, non-routine problem or opportunity, the hospital considers many diverse criteria for eliminating possible courses of action	.815	
F.10 When confronted with an important, non-routine problem or opportunity, the hospital conducts multiple examinations of any suggested courses of action	.788	
F.11 When confronted with an important, non-routine problem or opportunity, the hospital searches extensively for possible responses	.767	.438
F.3 Environmental scanning is conducted by a specialised unit/ department	.434	
F.5 The hospital continuously collects information about its external environment		.867
F.1 The hospital actively collects information about its external environment		.760
F.2 People working in the hospital collect information from sources outside the hospital		.758
F.6 The hospital extensively monitors the external environment		.749
F.4 Environmental information is collected only in response to specific problems, crises, or event(s)		.652

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 3 iterations.

Table 6.6: Exploratory Factor Analysis for the “Environmental Scanning” Construct.

All loadings for the two resulting factors were greater than 0.50, and they ranged from 0.652 to 0.867. The total cumulative variance explained by these factors was 66.3%, and each factor had an eigenvalue greater than 1. The Bartlett's Test of Sphericity (469.495, $P < 0.001$) and Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0.878) indicated that conducting the Exploratory Factor Analysis (EFA) was appropriate and that it satisfied the conditions for using such a statistical technique. The internal consistency reliability coefficient measures (Cronbach's alpha) were as follows: -

- The overall construct of "Environmental Scanning": 0.8781,
- The first factor of "**Deep Environmental Scanning**" (**DEEPSCAN**): 0.9078,
- The second factor of "**Wide Environmental Scanning**" (**WIDESCAN**): 0.8281.

The measures for the overall construct, as well as for the first and second factors, indicate very good to excellent levels of reliability for each of these constructs, since the recommended minimum acceptable level for Cronbach's alpha measuring reliability is 0.60, as advised by Hair et al. (1998). In general, for exploratory research, the minimum levels of acceptable reliability are usually set to be ranging from 0.50-0.60, as indicated by Nunnally (1978).

To conclude, based on both: the results of the EFA, as well as results of the internal consistency reliability test (Cronbach's alpha), two main "agility-enabling" factors / constructs have emerged from the main construct of "Environmental Scanning". These are:

- "**Deep Environmental Scanning**" (**DEEPSCAN**), which is measured by five items (F.7, F.8, F.9, F.10, F.11),
- "**Wide Environmental Scanning**" (**WIDESCAN**), which is measured by five items (F.1, F.2, F.4, F.5, F.6).

6.2.7 Operationalisation of the "Operational Flexibility" Construct

Most of the literature discussing operational flexibility mainly does so from a manufacturing context / point of view, in that most research into this area mainly addresses the flexibility of manufacturing systems or manufacturing organisations. However, the focus of this research is on service organisations, particularly healthcare provider organisations represented by NHS Trusts. This has led the researcher to

considering certain types of operational flexibility, which are primarily those that have a significant effect on the management and delivery of healthcare services provided by NHS Trusts.

The problems or issues often encountered by NHS Trusts have quite often been concerned with changes in volume of demand, ability to deliver a wide mix of healthcare services and/or certain types of services, as well as capacity and demand issues addressing the ability of these Trusts to quickly and easily adjust capacity (e.g. additional professional staff, equipment, beds, etc.), in view of changes in patient demand.

Based on this, the types of operational flexibility that are of concern and relevance in this research are those, which cover the aforementioned problems / issues. In other words, those that address changes in volume of demand, ability to deliver a wide mix of healthcare services, as well as ability to quickly and easily adjust capacity (additional professional staff, equipment, beds, etc.). Adopting such a conceptualisation of flexibility by this research has taken into consideration the warning expressed by Pagell and Krause (1999), in that the multi-dimensional nature of flexibility makes studying the entire construct difficult, especially at the operational level of analysis. Therefore, particular attention has been paid towards delineating those types of operational flexibility, which mostly address the issues affecting the nature of healthcare services delivery.

The conceptualisation of operational flexibility that is adopted in this research is consistent with that of Volberda (1996, 1997) and Chang et al. (2003). Volberda (1996, 1997) describes operational flexibility as part of the organisation's repertoire of flexibility capabilities, which enables it to respond at the right time in the right way, under turbulent environmental conditions. In this context, operational flexibility is described as providing "*rapid response to changes that are familiar. Such changes typically lead to temporary, short-term fluctuation in the organisation's level of activity*" (Volberda, 1996, p. 171). Examples of such a type of flexibility include variation of production volume, or level of service delivery in the case of this research, the building up of capacity required to perform the activities, which the service delivery process entails, as well as types and mix of services provided.

In a similar fashion, Chang et al. (2003) indicate that several studies have classified manufacturing (operational) flexibility into internal as well as external flexibility. Internal flexibility is concerned with the need for operations efficiency, such as machine, material handling and routing flexibility, and as such is not directly related to market demand and environmental uncertainties. External flexibility, on the other hand, is the one relative to the needs and requirements of customers and thus to an organisation's competitive advantage. Based on this, Chang et al. (2003) have attached more significance and importance to external flexibility, and have justified it by explaining that this type of flexibility is the one that directly affects an organisation's effective operation under environmental uncertainty. This is supported by a number of authors, who have discussed the linkages and interrelationships between manufacturing flexibility and agility / strategic flexibility, such as Beach et al. (2000), D'Souza and Williams (2000), and Vokurka and O'Leary-Kelly (2000). Examples of external flexibility, they indicate, include new product / service, product / service mix, modifications, delivery, and volume flexibility.

Therefore, operational flexibility in this research refers to the ability of the service delivery system of the hospital to adjust, adapt and, thus, respond flexibly to changes in the pressures and requirements posed by key stakeholders in the external environment (e.g. demand and requirements of patients, GPs, Health Authorities, Government/DoH, etc.).

With regard to the external type of manufacturing / operational flexibility, Chang et al. (2003) have measured the extent to which an organisation practises the various dimensions related to such a type of flexibility, through employing a six item scale. Three of the items included in such a scale were adapted to suit the context of healthcare service organisations, and were thus used by this research to measure the "agility-enabling" construct of Operational Flexibility. These items address: -

- The introduction of new healthcare services quickly and easily;
- Varying or adjusting the type and mix of services delivered or provided; and
- Adjusting as well as adapting the level of service delivery, according to changes in volume of demand.

Subsequently, these were reflected in items G.1-G.4 in the third part of the self-completion questionnaire. Item G.5 was designed to measure the extent to which the Trust quickly and easily adjusts its capacity (in terms of additional professional staff, equipment, beds, etc.), in the light of fluctuations in demand. The items measuring the “Operational Flexibility” construct were subjected to Exploratory Factor Analysis (EFA), using principal component analysis as the extraction method, included as part of the statistical applications provided by the “Statistical Package for Social Sciences” (SPSS) software package version 11.

The results presented in table 6.7 confirmed the unidimensionality of this construct, in that all items loaded significantly on only one factor, and none of these had a loading that was less than 0.50. The loadings for the 5 items making up this construct ranged from 0.567 to 0.877. The total cumulative variance explained by the one factor representing this construct was 58.3%, and it had an eigenvalue greater than 1 (2.916). The Bartlett’s Test of Sphericity (159.752, $P < 0.001$) and Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0.771) indicated that conducting the Exploratory Factor Analysis (EFA) was appropriate and that it satisfied the conditions for using such a statistical technique. The construct was labelled “**Operational Flexibility**” (**OPERFLEX**) and consisted of items (G.1, G.2, G.3, G.4, G.5).

Items and Measures Description	OPERFLEX
G.2 When confronted with changes/fluctuations in the demands and requirements posed on your healthcare delivery system, the hosp quickly & efficiently adjusts and varies the level or no. of services it delivers according to changes in demand	.877
G.3 When confronted with changes/fluctuations in the demands and requirements posed on your healthcare delivery system, the hospital quickly & efficiently varies or adjusts the type and mix of services it delivers or provides	.873
G.1 When confronted with changes/fluctuations in the demands and requirements posed on your healthcare delivery system, the hosp quickly & efficiently adjusts, adapts and responds to changes/fluctuations in the volume of demand posed on its Health Care Services	.736
G.4 When confronted with changes/fluctuations in the demands and requirements posed on your healthcare delivery system, the hospital quickly & efficiently introduces new healthcare services	.722
G.5 When confronted with changes/fluctuations in the demands and requirements posed on your healthcare delivery system, the hospital quickly & efficiently adds to and expands its capacity (in terms of additional professional staff, equipment, beds, etc.)	.567

Extraction Method: Principal Component Analysis.

1 Component extracted.

Table 6.7: Exploratory Factor Analysis for the “Operational Flexibility” Construct.

The internal consistency reliability coefficient measure (Cronbach's alpha) for the resulting unidimensional construct (OPERFLEX) was 0.8179, which indicates a very good level of reliability for this construct, since the recommended minimum acceptable level for Cronbach's alpha measuring reliability is 0.60, as advised by Hair et al. (1998).

Therefore, based on both: the result of the EFA, in that items measuring the main construct loaded significantly on one, unidimensional factor (OPERFLEX), as well as the result of the internal consistency reliability test, in that Cronbach's alpha for this new resulting construct / factor indicated very good reliability above the minimum acceptable level of 0.60, the next step taken was to represent the "**Operational Flexibility**" (OPERFLEX) construct by a summed variable, measured by the items (G.1-G.5).

6.2.8 Summary of the Outcomes of the Operationalisation and Measurement Process

To summarise the results of the aforementioned operationalisation and measurement process, based on the results of the statistical techniques employed in such a process, fourteen main "agility-enabling" factors / capabilities have emerged from the seven main constructs that were initially-developed, (i.e. *Dynamic Capabilities, Leadership and Change Management, Leeway in Organisational Structure, Leeway in Organisational Culture, Leeway in Technology, Environmental Scanning, Operational Flexibility*), in an effort designed to seek to fulfil the third research objective. These resulting fourteen factors include the following: -

(A) The "Dynamic Capabilities" construct resulted in the following two capabilities: -

- "**Dynamic Integration of Knowledge**" (DINTKNWL) (alpha = 0.87)
- "**Dynamic Co-ordination of Resources**" (DCOORRES) (alpha = 0.80)

(B) The "Leadership and Change Management" construct resulted in one capability, which is: -

- "**Effective Leadership and Change Management**" (EFLDCHGM) (alpha = 0.94)

(C) The “Leeway in Organisational Structure” construct resulted in the following three capabilities: -

- **“Horizontal Organic Structure” (HORGSTRU)** (alpha = 0.84)
- **“Decentralisation of Authority and Decision-Making” (DECENTRA)** (alpha = 0.88)
- **“Informal Style of Management” (INFORMAL)** (alpha = 0.78)

(D) The “Leeway in Organisational Culture” construct resulted in the following three capabilities: -

- **“Commitment to Shared Vision and Values” (CTSHVNVL)** (alpha = 0.88)
- **“Learning and Innovative Organisational Culture” (LEARNORG)** (alpha = 0.86)
- **“Tolerance to Change” (TOLCHANG)** (alpha = 0.62)

(E) The “Leeway in Technology” construct resulted in the following two capabilities:-

- **“Effective Provision of Information and Technology” (EFPROINF)** (alpha = 0.89)
- **“Open Attitude Towards Information and Knowledge” (ATINFOKN)** (alpha = 0.60)

(F) The “Environmental Scanning” construct resulted in the following two capabilities: -

- **“Deep Environmental Scanning” (DEEPSCAN)** (alpha = 0.91)
- **“Wide Environmental Scanning” (WIDESCAN)** (alpha = 0.83)

(G) The “Operational Flexibility” construct resulted in one capability, which is: -

- **“Operational Flexibility” (OPERFLEX)** (alpha = 0.82)

6.3 Analysis and Discussion of the “Agility-Enabling” Capabilities / Factors

It was explained earlier that the third part of the self-completion questionnaire was designed, to seek to fulfil the third research objective; being to explore and identify those capabilities that underpin organisational agility in the NHS Trusts. Thus, under that part, respondents were asked two main questions: Question 4.1 had the purpose of assessing the extent or level of existence / practice, of the identified “agility-enabling” capabilities, on the part of the Trusts, whereas Question 4.2 had the purpose

of assessing the perceived importance of these capabilities in enabling the NHS Trusts to respond and adapt to changes in their environments in an agile manner.

Therefore, based on these two questions, the analysis and discussion of the existence / practice, as well as the perceived importance of such capabilities, on the part of the Trusts, is presented. This is based upon the fourteen “agility-enabling” capabilities, which have emerged from operationalising the seven original constructs developed initially for data collection (see section 6.2). Such an operationalisation process mainly involved subjecting the items measuring each developed construct to a number of statistical techniques. These include Exploratory Factor Analysis (EFA) to extract underlying conceptual dimensions from each main construct, and checking the internal consistency reliability of the items that measure each of the resulting conceptual components, through Cronbach’s alpha coefficient. The final stage was to summate the items that measure each resulting component so as to represent a new “agility-enabling” variable, for further descriptive statistical analysis.

6.3.1 Exploring the Extent of *Practice*, of the Identified Fourteen “Agility-Enabling” Capabilities, on the Part of the NHS Trusts

This analysis is based on Question 4.1, which measures the extent of agreement with the items measuring each of these capabilities, using a “four-point” Likert-type scale that ranges from 1: “Strongly Disagree”, to 4: “Strongly Agree”.

Table 6.8 presents the fourteen “agility-enabling” capabilities, ranked in a descending order, according to the statistical means reflecting the extent to which respondents from each NHS Trust agree that each of these capabilities exists and is practiced, in their respective Trust.

Note: - (**DINTKNWL**): “Dynamic Integration of Knowledge”; (**DCOORRES**): “Dynamic Co-ordination of Resources”; (**EFLDCHGM**): “Effective Leadership and Change Management”; (**HORGSTRU**): “Horizontal Organic Structure”; (**DECENTRA**): “Decentralisation of Authority and Decision-Making”; (**INFORMAL**): “Informal style of Management”; (**CTSHVNVL**): “Commitment to Shared Vision and Values”; (**LEARNORG**): “Learning and Innovative Organisational Culture”; (**TOLCHANG**): “Tolerance to Change”; (**EFPROINF**): “Effective Provision of Information and Technology”; (**ATINFOKN**): “Open Attitude Towards Information and Knowledge”; (**DEEPSKAN**): “Deep Environmental Scanning”; (**WIDESKAN**): “Wide Environmental Scanning”; (**OPERFLEX**): “Operational Flexibility”.

The Ranking of the “Agility-Enabling” Capabilities, according to the extent to which they are Implemented / Practiced.					
Trust A			Trust B		
Agility-enabling Capability	Mean	Std. Dev.	Agility-enabling Capability	Mean	Std. Dev.
1. DINTKNWL	2.95	.788	1. EFLDCHGM	2.85	.664
2. EFLDCHGM	2.72	.721	2. DINTKNWL	2.83	.609
3. LEARNORG	2.64	.830	3. DECENTRA	2.76	.634
4. DEEPSCAN	2.64	.580	4. ATINFOKN	2.76	.698
5. TOLCHANG	2.57	.835	5. CTSHVNVL	2.76	.697
6. DECENTRA	2.53	.689	6. LEARNORG	2.75	.646
7. INFORMAL	2.49	.665	7. DEEPSCAN	2.49	.656
8. ATINFOKN	2.48	.779	8. WIDESCAN	2.45	.640
9. WIDESCAN	2.43	.744	9. INFORMAL	2.41	.743
10. EFPROINF	2.42	.811	10. DCOORRES	2.37	.540
11. CTSHVNVL	2.42	.846	11. TOLCHANG	2.37	.657
12. DCOORRES	2.40	.795	12. EFPROINF	2.30	.640
13. OPERFLEX	2.33	.649	13. HORGSTRU	2.23	.658
14. HORGSTRU	2.14	.573	14. OPERFLEX	2.17	.586

Table 6.8: Descending Means for the “agility-enabling” capabilities, which reflect their extent of implementation / practice.

It can be seen from table 6.8 that five “agility-enabling” capabilities have been considered in both Trusts to be the ones, which are practised the most. In other words, respondents from both Trusts have given a moderate to a relatively high degree of agreement that these five capabilities are existent and are practised. These have ranked among the seven most practised capabilities in both Trusts, although with varying rankings for the same capability in each Trust. Such capabilities are:

1. “Dynamic Integration of Knowledge” (**DINTKNWL**),
2. “Effective Leadership and Change Management” (**EFLDCHGM**),
3. “Learning and Innovative Organisational Culture” (**LEARNORG**),
4. “Deep Environmental Scanning” (**DEEPSCAN**), and
5. “Decentralisation of Authority and Decision-Making” (**DECENTRA**).

Based on this finding, these five capabilities are considered as common strength areas in the two NHS Trusts, in terms of the existence and practice of “agility-enabling” capabilities. Table 6.9 presents these strength areas related to agility-enabling capabilities.

Agility-enabling capability as a strength area	Trust A				Trust B			
	Mean	Std. Dev.	Percentage of Agreement		Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree			Disagree	Agree
DINTKNWL	2.95	.788	36.4%	63.6%	2.83	.609	28.3%	71.7%
EFLDCHGM	2.72	.720	45.5%	54.5%	2.85	.664	30%	70%
LEARNORG	2.64	.830	50%	50%	2.75	.646	30%	70%
DEEPCAN	2.63	.580	31.8%	68.2%	2.49	.656	41.7%	58.3%
DECENTRA	2.53	.689	40.9%	59.1%	2.76	.634	30%	70%

Table 6.9: The common agility-enabling capabilities considered as strength areas in both NHS Trusts.

These findings are believed to be quite consistent with the reality characterising healthcare organisations / hospitals, in general, and the current situation in the two Trusts addressed in this research. For instance:

- With regard to “Dynamic Integration of Knowledge” and “Learning and Innovative Organisational Culture”, hospitals are quite often known for their skilled and professional workforce, which they recruit and rely upon in delivering healthcare services. Consultants, doctors, nurses, therapists, as well as healthcare services managers, are people, who possess specialised forms of knowledge, skills, and competencies that are considered absolutely essential for the hospital’s effective operation and provision of services. Without the effective and purposeful integration, harnessing, and management of the skills and capabilities that these professional hospital members possess, performance is most likely to suffer. This characteristic of hospitals also impinges upon the need to have continuous renewal and updating of such knowledge and capabilities, which is addressed by building and developing a culture in the hospital that promotes learning, education / knowledge gain, as well as training.
- “Effective leadership” as well as “decentralisation and delegation of authority” have recently been emphasised in managing NHS Trusts, especially in the light of the initiatives undertaken by the two Trusts subject of investigation in this research, which have been published in the management arrangements documentation (earlier mentioned outlining the new organisational structure), provided to the researcher. These discuss the efforts undertaken lately, which aim at creating a clinical management structure that assumes most of the managerial as well as organisational responsibilities normally attached to the executive management

level represented by the Chief Executive and executive directors. In this way, the Trusts are increasingly being re-organised and re-structured around a number of main clinical divisions, each headed by a clinician, who is assisted by both professional managers as well as clinicians. This represents a new shift in the nature of the relationship between managers and clinicians in the NHS, which have quite often been characterised by conflict and separation by functional silos, towards instilling a new spirit of empowerment, shared responsibility and authority, as well as mutual co-operation.

- As discussed earlier in section 6.2.6, “deep environmental scanning” refers to the comprehensiveness of the organisation in examining alternative explanations and solutions, when confronted with an important, environmental, non-routine problem or opportunity. The agreement indicating the practice of such a capability concerned with orienting as well as galvanising the efforts of the Trust towards responding to external requirements and demands can be explained by the heavy emphasis, which successive governments have placed upon the NHS. The importance of the requirements, expectations and pressures quite often imposed by central Governments have characterised successive conservative governments’ “market reforms”, as well as the recent and current New Labour Governments’ agenda towards the NHS. Such an agenda was illustrated by the publication of both: The NHS Plan, and the White Paper: “The New NHS: Modern; Dependable”.

As a result, key governmental target areas and priorities have come to form an essential part of the “work agenda” for most of the organisations operating within the NHS; the most prominent of which are NHS Trusts. This has necessitated on the part of such Trusts to detect the most significant environmental and performance targets, fully understand their requirements, and then act to fulfil them. Hence the need for ***deep environmental scanning*** or what is known as “comprehensiveness”, which is defined as “*the extent to which an organisation when confronted with an important non-routine problem or opportunity tends to extensively examine alternative explanations and solutions*” (Lindgren, 2000, p. 120).

It can also be seen from table 6.8 that five “agility-enabling” capabilities have been considered in both Trusts to be the ones, which are practised the least, although with varying rankings for the capabilities in each Trust. In other words, respondents in both Trusts gave a relatively low degree of agreement that the six capabilities are existent and are practised. Such capabilities are:

1. “Horizontal Organic Structure” (**HORGSTRU**)
2. “Operational Flexibility” (**OPERFLEX**)
3. “Dynamic Co-ordination of Resources” (**DCOORRES**)
4. “Effective Provision of Information and Technology” (**EFPROINF**)
5. “Wide Environmental Scanning” (**WIDESCAN**)

Based on this finding, these five capabilities are considered as common weakness areas in the two NHS Trusts, in terms of the existence and practise of “agility-enabling” capabilities. Table 6.10 presents these weakness areas related to agility-enabling capabilities.

Agility-enabling capability as a weakness area	Trust A				Trust B			
	Mean	Std. Dev.	Percentage of Agreement		Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree			Disagree	Agree
HORGSTRU	2.14	.573	81.8%	18.2%	2.23	.658	70%	30%
OPERFLEX	2.33	.649	50%	50%	2.17	.586	71.7%	28.3%
DCOORRES	2.40	.795	68.2%	31.8%	2.37	.540	61.7%	38.3%
EFPROINF	2.42	.811	54.5%	45.5%	2.30	.640	66.7%	33.3%
WIDESCAN	2.43	.744	59.1%	40.9%	2.45	.640	51.7%	48.3%

Table 6.10: The common agility-enabling capabilities considered as weakness areas in both NHS Trusts.

- *Horizontal structure, and co-ordination of resources:* Although the two Trusts subject of investigation in this research have embarked on steps to establish a more open and empowering working environment within each of them, through introducing the recent clinical management structure, the findings here indicate that there is still some way to go in that regard. For example, issues concerned with cutting down bureaucracy and red tape, encouraging strong co-operation and integration among different units, locations, and departments, through forming teams and sharing resources across traditional functional boundaries, are still fairly novel concepts that require some time to become widespread.

- The findings concerned with the lack of “operational flexibility” in both Trusts are consistent with the problems often encountered by NHS hospital Trusts, particularly in periods that witness severe seasonal fluctuations in demand for particular healthcare services, such as the winter season and epidemic outbreaks of influenza and cold related cases, for example. Almost all of the reports highlighting such problems faced by NHS Trusts emphasise shortages in beds, equipment and nurses as major reasons for crises within the NHS. Limited capacity and resources coupled with increased demand is concluded to be the main characteristic of such problems. This can well explain the reason why both Trusts have considered operational flexibility, which refers here to the ability of the service delivery system of the hospital to adjust, adapt and, thus, respond flexibly to changes in the pressures and requirements posed by key stakeholders in the external environment (e.g. demand and requirements of patients, GPs, Health Authorities, Government/DoH, etc.), as being one of the least implemented / practised capabilities.

- Among the other weakness areas indicated by respondents in both Trusts to exist in their organisations is the apparent lack of “*effective provision of information and technology*”. This problem has been mentioned repeatedly by interviewees from both Trusts, who have complained about the outdated IT support in their respective Trust, as well as the overwhelming amount of information provided in the form of key Governmental performance targets and guidelines. There was an obvious need to overhaul the IT network in both Trusts, as well as modernise personal computers used by members of the organisation. This apparent lack of effective provision of information may well explain another weakness indicated by respondents from both Trusts, which is that related to the ability to scan the external environment in order to identify the major parties affecting the hospital’s management and delivery of healthcare services.

A more detailed exploration of the levels of existence and practice of each of these capabilities is now provided. Tables 6.11 to 6.17 present the comparisons between the Trusts, according to the statistical means reflecting the extent to which respondents agree that each of these capabilities exists and is practiced, in each of the Trusts. Also,

tables 6.11 to 6.17 present the proportion of respondents who agree that the particular capability is practised, and the proportion of those who disagree. Such comparisons are presented for the set of capabilities emerging from each of the seven main constructs, as follows:

(A): The level of existence / practice of the two capabilities, which emerged from the “Dynamic Capabilities” construct: -

- “Dynamic Integration of Knowledge” (**DINTKNWL**), and
- “Dynamic Co-ordination of Resources” (**DCOORRES**).

Trust A					Trust B				
Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement		Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree				Disagree	Agree
1. DINTKNWL	2.95	.788	36.4%	63.6%	1. DINTKNWL	2.83	.609	28.3%	71.7%
2. DCOORRES	2.40	.795	68.2%	31.8%	2. DCOORRES	2.37	.540	61.7%	38.3%

Table 6.11: Levels of implementation / practice concerning the two capabilities of: “Dynamic Integration of Knowledge”, and “Dynamic Co-ordination of Resources”.

It can be seen from table 6.11 that the “Dynamic Integration of Knowledge” capability is widely practised in both Trusts, unlike the capability of “Dynamic Co-ordination of Resources”. This is evidenced by the statistical means reflecting the extent of respondents’ agreement, with regard to the practice of each capability in their respective Trusts. Respondents from Trusts A and B expressed a stronger degree of agreement, as to the practise of “Dynamic Integration of Knowledge”, which is reflected in the two means of 2.95 and 2.83, respectively. This is compared with the relatively low degree of agreement expressed by respondents from both Trusts (A and B), as to the practise of “Dynamic Co-ordination of Resources”, which is reflected in the two means of 2.40 and 2.37, respectively. Also, a majority proportion of respondents in both Trusts agreed that “Dynamic Integration of Knowledge” was practised in their respective Trusts, as opposed to a majority proportion of respondents from the same Trusts disagreeing that “Dynamic Co-ordination of Resources” was in fact practised.

(B): The level of existence / practice of the capability, which emerged from the “Leadership and Change Management” construct: -

- “Effective Leadership and Change Management” (**EFLDCHGM**).

Trust A					Trust B				
Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement		Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree				Disagree	Agree
EFLDCHGM	2.72	.720	45.5%	54.5%	EFLDCHGM	2.85	.664	30%	70%

Table 6.12: Levels of implementation / practice concerning the “Effective Leadership and Change Management” capability.

Although respondents from both Trusts have expressed the agreement that their Trusts exhibited effective leadership and change management, nevertheless, it can be seen that a higher proportion of respondents from **Trust B** have expressed such an agreement (70%), compared with (54.5%) of respondents from **Trust A**. This is also supported by the means reflecting the extent to which respondents from each Trust agreed that effective leadership and management of change was evident in their Trusts. (2.85 in Trust B, compared with 2.72 in Trust A)

(C): The level of existence / practice of the three capabilities, which emerged from the “Leeway in Organisational Structure” construct: -

- “Horizontal Organic Structure” (**HORGSTRU**)
- “Decentralisation of Authority and Decision-Making” (**DECENTRA**)
- “Informal style of Management” (**INFORMAL**)

Trust A					Trust B				
Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement		Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree				Disagree	Agree
1. HORGSTRU	2.14	.573	81.8%	18.2%	1. HORGSTRU	2.23	.658	70%	30%
2. DECENTRA	2.53	.689	40.9%	59.1%	2. DECENTRA	2.76	.634	30%	70%
3. INFORMAL	2.49	.665	45.5%	54.5%	3. INFORMAL	2.41	.743	50%	50%

Table 6.13: Levels of implementation / practice concerning the three capabilities of: “Horizontal Organic Structure”, “Decentralisation of Authority and Decision-Making”, and “Informal style of Management”.

From examining table 6.13, it is concluded that among the three “agility-enabling” capabilities associated with *leeway in organisational structure*, “decentralisation of authority and decision-making” has emerged as the capability that is practised the most in both Trusts, with above moderate to fairly strong degrees of agreement. In particular, respondents from Trust B have expressed a relatively stronger agreement that “decentralisation of authority and decision-making” was evident in their Trust, compared with Trust A. There was less than moderate agreement regarding the

existence of an “informal style of management”, and even a low degree of agreement as to the existence of a “horizontal organic structure”, in the two Trusts.

(D): The level of existence / practice of the three capabilities, which emerged from the “Leeway in Organisational Culture” construct: -

- “Commitment to Shared Vision and Values” (**CTSHVNVL**)
- “Learning and Innovative Organisational Culture” (**LEARNORG**)
- “Tolerance to Change” (**TOLCHANG**)

Trust A					Trust B				
Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement		Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree				Disagree	Agree
1. CTSHVNVL	2.42	.846	59.1%	40.9%	1. CTSHVNVL	2.76	.699	28.3%	71.7%
2. LEARNORG	2.64	.830	50%	50%	2. LEARNORG	2.75	.646	30%	70%
3. TOLCHANG	2.57	.835	54.5%	45.5%	3. TOLCHANG	2.37	.657	68.3%	31.7%

Table 6.14: Levels of implementation / practice concerning the three capabilities of: “Commitment to Shared Vision and Values”, “Learning and Innovative Organisational Culture”, and “Tolerance to Change”.

A higher proportion of respondents in Trust B have agreed that their Trust exhibited *commitment to a shared set of vision and core values*, compared with Trust A. This is evidenced by the finding that 71.7% of respondents from Trust B have expressed such an agreement, compared with only 40.9% of respondents from Trust A. Also, the mean reflecting such agreement is clearly higher in the case of Trust B (2.76), than in Trust A (2.42). This difference between the two Trusts has also been repeated when asked about the extent to which the Trust was promoting a *learning organisational culture*. A higher proportion of respondents in Trust B have agreed that practices facilitative of a learning organisational culture were evident in their Trust (70%), compared with Trust A (50%). This is evidenced by the finding that the mean reflecting such agreement is higher in the case of Trust B (2.75), than in Trust A (2.64).

Both Trusts did not exhibit a high degree of agreement when asked whether their organisations were *tolerant to change*. Only 45.5% of respondents from Trust A, and 31.7% of respondents from Trust B agreed that tolerance to change was encouraged and promoted in their Trusts, with means of 2.57 and 2.37 for each Trust, respectively. This is compared with 54.5% of respondents from Trust A and 68.3% from Trust B disagreeing that their Trusts were tolerant to change.

(E): The level of existence / practice of the two capabilities, which emerged from the “Leeway in Technology” construct: -

- “Effective Provision of Information and Technology” (**EFPROINF**)
- “Open Attitude Towards Information and Knowledge” (**ATINFOKN**)

Trust A					Trust B				
Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement		Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree				Disagree	Agree
1. EFPROINF	2.42	.811	54.5%	45.5%	1. EFPROINF	2.30	.640	66.7%	33.3%
2. ATINFOKN	2.48	.779	68.2%	31.8%	2. ATINFOKN	2.76	.698	43.3%	56.7%

Table 6.15: Levels of implementation / practice concerning the two capabilities of: “Effective Provision of Information and Technology”, and “Open Attitude Towards Information and Knowledge”.

Both Trusts did not express a high degree of agreement when asked whether their organisations were effective in their *provision of information and knowledge*. Only 45.5% of respondents from Trust A, and 33.3% of respondents from Trust B agreed that information and knowledge were effectively provided in their Trusts, with means of 2.42 and 2.30 for each Trust, respectively.

However, there was a clear difference between the Trusts, when asked about their agreement as to whether there was an open attitude towards information and knowledge, in their organisations. Respondents from Trust B expressed a stronger degree of agreement as to the existence of such an attitude; a proportion of 56.7% agreeing and 43.3% disagreeing, and a mean of 2.76, compared with Trust A; a proportion of 31.8% agreeing and 68.2% disagreeing, and a mean of 2.48.

(F): The level of implementation / practice of the two capabilities, which emerged from the “Environmental Scanning” construct: -

- “Deep Environmental Scanning” (**DEEPSCAN**)
- “Wide Environmental Scanning” (**WIDESCAN**)

Trust A					Trust B				
Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement		Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree				Disagree	Agree
1. DEEPSCAN	2.63	.580	31.8%	68.2%	1. DEEPSCAN	2.49	.656	41.7%	58.3%
2. WIDESCAN	2.43	.744	59.1%	40.9%	2. WIDESCAN	2.45	.640	51.7%	48.3%

Table 6.16: Levels of implementation / practice concerning the two capabilities of: “Deep Environmental Scanning”, and “Wide Environmental Scanning”.

It can be seen from table 6.16 that both Trusts did not reflect a high degree of agreement that they were actively and extensively collecting information about as many environmental factors as possible, which is evidenced by the two means of 2.43 and 2.45 for Trusts A and B, respectively, and a proportion of 40.9% and 48.3% agreeing from each Trust, respectively. With regard to activities associated with deep scanning, which refers to focusing on a number of main factors believed to be affecting the organisation, respondents from Trust A have expressed a relatively higher degree of agreement that such activities are practised in their organisation, compared with Trust B.

(G): The level of existence / practice of the capability, which emerged from the “Operational Flexibility” construct: -

– “Operational Flexibility” (**OPERFLEX**)

Trust A					Trust B				
Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement		Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree				Disagree	Agree
OPERFLEX	2.33	.649	50%	50%	OPERFLEX	2.17	.586	71.7%	28.3%

Table 6.17: Levels of implementation / practice concerning the capability of: “Operational Flexibility”.

The statistical means reflecting the extent of respondents’ agreement, as to whether the capability of operational flexibility was evident in their respective Trusts, indicate a low degree of agreement for respondents in both Trusts. (2.33 and 2.17 in Trusts A and B, respectively) Also, the proportion of respondents agreeing that operational flexibility was evident and existent in their Trust was 50% in Trust A, and 28.3% in Trust B.

6.3.1.1 Significant Differences Emerging from Comparison between the Two NHS Trusts

It has been explained earlier that this research involves a comparison between two NHS Trusts: **Trust A**, which is rated as a “*one star, lower performing*” Trust, and **Trust B**, which is rated as a “*three star higher performing*” Trust, according to the NHS Performance Ratings published by the Commission for Health Improvement (CHI) (2003). The choice of these two differently performing Trusts provides an interesting opportunity for exploring whether there is a corresponding difference

between these Trusts, in terms of the main concepts and variables concerning organisational agility being addressed in this research, and are covered by its main objectives. This is considered in its own right a major contribution of this study.

Based on this, and in order to achieve this purpose, the “Mann-Whitney U test” was employed. This test detects whether there are statistically significant differences between two samples, which are in the case of this research the responses collected from each of the two NHS Trusts. In this way, the test employed here detects whether there is a significant difference between the two Trusts, in terms of the statistical means representing the extent to which respondents from each Trust agree that each of the “agility-enabling” capabilities is practised / exists in their respective Trust.

⇒ Note that the rationale for using this test is explained in sub-section 4.8.2: “The Rationale for Using the Mann Whitney U Test”.

First: - Mann-Whitney U Test was conducted in order to detect whether there are statistically significant differences between the two Trusts, in terms of the extent to which respondents from each agree that the aforementioned fourteen “agility-enabling” capabilities are practised / evident in their organisations.

The results arrived at from conducting the Mann-Whitney U Test (see Appendix M: Mann-Whitney U Test Checking for Significant Differences Between the Trusts, in terms of Existence / Practice of “Agility-Enabling” Capabilities) show that the two Trusts significantly differ, in terms of the practice / existence of two main capabilities. These are: -

⇒ **“Commitment to Shared Vision and Values” (CTSHVNVL), and**

⇒ **“Open Attitude Towards Information and Knowledge” (ATINFOKN).**

a) **“Commitment to Shared Vision and Values” (CTSHVNVL):** - Returning to table 6.14, it can be clearly seen that a higher proportion of respondents in Trust B have agreed that their Trust exhibited *commitment to a shared set of vision and core values*, compared with Trust A. This is evidenced by the finding that 71.7% of respondents from Trust B have expressed such an agreement, compared with only 40.9% of respondents from Trust A. Also, the statistical mean reflecting such

agreement is clearly higher in the case of Trust B (2.76), than in Trust A (2.42). Therefore, the significant difference between the Trusts in terms of the existence of this capability is in favour of Trust B.

Based on this significant difference, Mann-Whitney U Test was conducted in order to check whether there are significant differences between the Trusts, in terms of the extent of their agreement as to the practice of the items measuring the capability of “*Commitment to Shared Vision and Values*” (items D.12-D.16). The results of the Mann-Whitney U Test revealed that there are statistically significant differences between the Trusts, in terms of three items: D.14, D.15, and D.16 (see Appendix N: Checking for Significant Differences Between the Trusts, in terms of the Implementation of Items Reflecting the “Agility-Enabling” Capabilities). The descriptive statistics for these items are compared between the two Trusts in table 6.18, as follows:

Item Description	Trust A				Trust B			
	Mean	Std. Dev.	Percentage of Agreement		Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree			Disagree	Agree
D.14 Every effort is made to agree on and communicate a clear vision for the hospital to all levels	2.41	.908	59.1%	40.9%	2.88	.941	26.7%	73.3%
D.15 The hospital’s core values are clear, widely shared, and consistently adhered to	2.32	.894	68.2%	31.8%	2.63	.807	40.7%	59.3%
D.16 Every effort is made to assure that everybody has access to all the information they need concerning the hospital’s vision, core values, as well its current and desired performance targets	2.50	.964	54.5%	45.5%	3.00	.992	31.7%	68.3%

Table 6.18: Differences in Levels of implementation / practice concerning three items related to “commitment to shared vision and values, between the Trusts.

It can be seen from table 6.18 that respondents from Trust B clearly exhibit a higher degree of agreement, with regard to the implementation / practice of these three items related to “commitment to shared vision and values”, compared with Trust A. This is evidenced by the results presented above, in that the means reflecting the degree of agreement concerning each of these items (D14, D.15, D.16) are higher in the case of Trust B (2.88, 2.63, 3.0), compared with Trust A (2.41, 2.32, 2.5), respectively. Also, the proportions of respondents who agree that the same items are practised are higher in the case of Trust B (73.3%, 59.3%, 68.3%), compared with Trust A (40.9%,

31.8%, 45.5%), respectively. Therefore, the significant differences between the Trusts, in terms of the practice of these three activities related to “commitment to shared vision and values”, are in favour of Trust B.

b) **“Open Attitude Towards Information and Knowledge” (ATINFOKN):** - Returning to table 6.15, it can be seen that a higher proportion of respondents in Trust B have agreed that their Trust exhibited an *open attitude towards information and knowledge*, compared with Trust A. This is evidenced by the finding that 56.7% of respondents from Trust B have expressed such an agreement, compared with only 31.8% of respondents from Trust A. Also, the statistical mean reflecting such agreement is clearly higher in the case of Trust B (2.76), than in Trust A (2.48). Therefore, the significant difference between the Trusts in terms of the existence of this capability is in favour of Trust B.

Based on this significant difference, Mann-Whitney U Test was conducted in order to check whether there are significant differences between the Trusts, in terms of the extent of their agreement as to the practice of the items measuring the capability of ***“Open Attitude Towards Information and Knowledge”*** (items E.3 and E.8). The results of the Mann-Whitney U Test revealed that there are no statistically significant differences between the Trusts, in terms of these items (see Appendix N: Checking for Significant Differences Between the Trusts, in terms of the Implementation of Items Reflecting the “Agility-Enabling” Capabilities). However, table 6.19 shows that there are differences between the Trusts, exhibited through descriptive statistics, as follows: -

Item Description	Trust A				Trust B			
	Mean	Std. Dev.	Percentage of Agreement		Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree			Disagree	Agree
E.3 Information and knowledge are considered and viewed as resources to be openly shared rather than selectively deployed	2.41	1.1	50%	50%	2.82	.748	28.3%	71.7%
E.8 Information and knowledge are viewed as potential sources of organisational rather than personal power	2.55	.926	40.9%	59.1%	2.71	.817	34.5%	65.5%

Table 6.19: Differences in Levels of implementation / practice concerning the two items related to “open attitude towards information and knowledge”, between the Trusts.

It can be seen from table 6.19 that respondents from Trust B exhibit a higher degree of agreement, with regard to the implementation / practice of these items related to “**open attitude towards information and knowledge**”, compared with Trust A. This is evidenced by the results presented above, in that the means reflecting the degree of agreement concerning each of these items (E.3, E.8) are higher in the case of Trust B (2.82, 2.71), compared with Trust A (2.41, 2.55), respectively. Also, the proportions of respondents who agree that the same items are practised are higher in the case of Trust B (71.7%, 65.5%), compared with Trust A (50%, 59.1%), respectively.

Second: - Apart from the items, which measure the two capabilities discussed earlier, Mann-Whitney U Test was also conducted in order to check whether there are significant differences between the Trusts, in terms of the extent of their agreement as to the practice of the items measuring the remaining “agility-enabling” capabilities (see Appendix N: Checking for Significant Differences Between the Trusts, in terms of the Implementation of Items Reflecting the “Agility-Enabling” Capabilities).

⇒ Significant differences were detected between the Trusts, in terms of the practice of two items reflecting *visionary leadership*. These are presented in table 6.20.

Item Description	Trust A				Trust B			
	Mean	Std. Dev.	Percentage of Agreement		Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree			Disagree	Agree
B.1 Top Management Team (TMT) are known for their effectiveness in developing a long-term vision for the organisation and communicating that vision to all levels in the organisation	2.27	.985	63.6%	36.4%	2.63	.802	40%	60%
B.3 TMT are known for their effectiveness in encouraging and gaining commitment to continuous change and achieving the hospital/Trust’s vision	2.36	.902	63.6%	36.4%	2.67	.796	33.3%	66.7%

Table 6.20: Differences in Levels of implementation / practice concerning the two items reflecting visionary leadership, between the Trusts.

It can be seen from table 6.20 that respondents from Trust B exhibit a higher degree of agreement, with regard to the implementation / practice of the two items reflecting visionary leadership, compared with Trust A. This is evidenced by the results presented above, in that the means reflecting the degree of agreement concerning each of these items (B.1, B.3) are higher in the case of Trust B (2.63, 2.67), compared

with Trust A (2.27, 2.36), respectively. Also, the proportions of respondents who agree that the same items are practised are higher in the case of Trust B (60%, 66.7%), compared with Trust A (36.4%, 36.4%), respectively. Therefore, these significant differences are in favour of Trust B.

⇒ A significant difference was detected between the Trusts, in terms of *the communication of decisions on a continuous basis to all people working in the hospital / Trust*. This is presented in table 6.21.

Item Description	Trust A				Trust B			
	Mean	Std. Dev.	Percentage of Agreement		Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree			Disagree	Agree
C.12 Decisions are communicated on a continuous basis and without delay to all people working in the hospital	1.86	.834	81.8%	18.2%	2.61	.965	42.4%	57.6%

Table 6.21: Differences in Levels of implementation / practice concerning communication of decisions, between the Trusts.

It can be seen from table 6.21 that respondents from Trust B exhibit a higher degree of agreement, with regard to the practice concerning the continuous communication of decisions to all people working in the Trust, compared with Trust A. This is evidenced by the results presented above, in that the mean reflecting the degree of agreement concerning this practice is higher in the case of Trust B (2.61), compared with Trust A (1.86). Also, the proportion of respondents who agree that such a practice is existent is higher in the case of Trust B (57.6%), compared with Trust A (18.2%). In addition, the proportion of those who disagree that decisions are communicated to all people in the organisation is higher in Trust A (81.8%), compared with Trust B (42.5%). Therefore, this significant difference is in favour of Trust B.

⇒ Significant differences were detected between the Trusts, in terms of three items related to the existence of *a learning and innovative organisational culture in the hospital / Trust*. These are presented in table 6.22.

Item Description	Trust A				Trust B			
	Mean	Std. Dev.	Percentage of Agreement		Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree			Disagree	Agree
D.1 The hospital continuously reviews major decisions and actions, by a group of knowledgeable clinicians and/or managers	2.86	.834	31.8%	68.2%	2.51	.797	55.2%	44.8%
D.7 Change is seen as not only seen as invigorating but also as essential to organisational success	2.68	.780	40.9%	59.1%	2.98	.725	20%	80%
D.11 The hospital focuses on and invests in building and developing general skills, including communication, problem solving and decision-making	2.55	.912	54.5%	45.5%	2.88	.885	25%	75%

Table 6.22: Differences in Levels of implementation / practice concerning three items related to the presence of a learning organisational culture, between the Trusts.

Although respondents from Trust A exhibited a higher degree of agreement, in that their Trust continuously reviews major decisions by a group of knowledgeable managers and clinicians, compared with Trust B, however, the situation was reversed with regard to the two other practices. Respondents from Trust B expressed a higher degree of agreement, with regard to: **a-** the perception of change in their Trust as being invigorating and essential to its success (80% of respondents agreeing with a mean score of 2.98), as well as **b-** The Trust's investment in building and developing general skills related to communication, problem solving and decision-making (75% of respondents agreeing with a mean score of 2.88), compared with Trust A. 59.1% of respondent from Trust A agreed that change was perceived as invigorating and essential to organisational success, with a mean score of 2.68, and only 45.5% of them agreed that their Trust was investing in building and developing general skills related to problem solving and decision-making.

⇒ A significant difference was detected between the Trusts, in terms of the *activity of collecting information from sources outside the hospital / Trust*, which is related to wide environmental scanning. This is presented in table 6.23.

Item Description	Trust A				Trust B			
	Mean	Std. Dev.	Percentage of Agreement		Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree			Disagree	Agree
F.2 People working in the hospital collect information from sources outside the hospital	2.27	.827	68.2%	31.8%	2.68	.716	39.3%	60.7%

Table 6.23: Differences in Levels of implementation / practice concerning collection of information from sources outside the Trust, between the Trusts.

It can be clearly seen from table 6.23 that respondents from Trust B exhibit a higher degree of agreement, with regard to the practice concerning the collection of information from sources outside the hospital / Trusts, compared with Trust A. This is evidenced by the results presented above, in that the mean reflecting the degree of agreement concerning this practice is higher in the case of Trust B (2.68), compared with Trust A (2.27). Also, the proportion of respondents who agree that such a practice is existent is higher in the case of Trust B (60.7%), compared with Trust A (31.8%). Therefore, this significant difference is in favour of Trust B.

6.3.2 Exploring the Perceived Importance of the Identified Fourteen “Agility-Enabling” Capabilities, in Enabling the NHS Trusts to Respond and Adapt to Changes in their Environments in an Agile Manner

This analysis is based on Question 4.2, which measures the extent to which the practices reflected in each of the items representing these capabilities is considered important, in enabling the Trust to respond and adapt to changes in its external environment in an agile manner. The question employs a “four-point” Likert-type scale that ranges from 1: “Not Important At All”, to 4: “Very Important”. Table 6.24 presents the fourteen “agility-enabling” capabilities, ranked in a descending order, according to the statistical means reflecting the extent to which each is perceived to be important in enabling each of the NHS Trusts to respond and adapt to environmental changes, in an agile manner.

Note: - **(DINTKNIM)**: Importance of “Dynamic Integration of Knowledge”; **(DCOOREIM)**: Importance of “Dynamic Co-ordination of Resources”; **(LDCHGIMP)**: Importance of “Effective Leadership and Change Management”; **(HORGSTIM)**: Importance of “Horizontal Organic Structure”; **(DECENTIM)**: Importance of “Decentralisation of Authority and Decision-Making”; **(INFORMIM)**: Importance of “Informal style of Management”; **(CTVNVLIM)**: Importance of “Commitment to Shared Vision and Values”; **(LEARNOIM)**: Importance of “Learning and Innovative Organisational Culture”; **(TOLCHGIM)**: Importance of “Tolerance to Change”; **(EFPNFIM)**: Importance of “Effective Provision of Information and Technology”; **(ATINFIMP)**: Importance of “Open Attitude Towards Information and Knowledge”; **(DEEPCIM)**: Importance of “Deep Environmental Scanning”; **(WIDESCIM)**: Importance of “Wide Environmental Scanning”; **(OPERFLIM)**: Importance of “Operational Flexibility”.

The Ranking of the “Agility-Enabling” Capabilities, according to the extent of their perceived importance in enabling the Trusts to better respond and adapt to environmental changes					
Trust A			Trust B		
Agility-enabling Capability	Mean	Std. Dev.	Agility-enabling Capability	Mean	Std. Dev.
1. CTVNVLIM	3.73	.336	1. LDCHGIMP	3.58	.397
2. LDCHGIMP	3.72	.262	2. CTVNVLIM	3.54	.475
3. EFPINFIM	3.62	.354	3. DCOOREIM	3.53	.402
4. DINTKNIM	3.60	.349	4. DINTKNIM	3.51	.394
5. DCOOREIM	3.59	.289	5. EFPINFIM	3.47	.408
6. DECENTIM	3.52	.362	6. DECENTIM	3.42	.449
7. LEARNOIM	3.51	.374	7. ATINFIMP	3.41	.586
8. HORGSTIM	3.42	.449	8. OPFLEXIM	3.38	.457
9. OPFLEXIM	3.39	.533	9. LEARNOIM	3.38	.500
10. TOLCHGIM	3.36	.581	10. HORGSTIM	3.36	.469
11. ATINFIMP	3.34	.565	11. TOLCHGIM	3.18	.644
12. DEEPCIM	3.14	.425	12. DEEPCIM	3.08	.623
13. WIDESCIM	3.00	.386	13. WIDESCIM	3.06	.452
14. INFORMIM	2.70	.769	14. INFORMIM	2.85	.649

Table 6.24: Descending Means for the “agility-enabling” capabilities, which reflect their perceived importance.

An important finding emerging from the results presented in table 6.24 indicates that respondents from both Trusts clearly perceive that all of the identified capabilities are important in enabling their respective Trusts to respond and adapt to changes in their external environments in an agile manner. This strongly supports the importance and contribution of the fourteen identified “agility-enabling” capabilities in seeking to achieve agility. As table 6.24 shows, the two most important capabilities, according to both Trusts, are “commitment to shared vision and values” and “effective leadership and change management”, whereas the two capabilities that ranked at the bottom of the table, although the scores reflecting their degree of importance are high, are “wide scanning” and “informal style of management”.

A more detailed exploration of the perceived importance of each of these capabilities is provided. Tables 6.25 to 6.31 present the comparisons between the Trusts, in terms of their levels of perceived importance of each of the fourteen “agility-enabling” capabilities. Such levels of importance are assessed through the statistical means reflecting the extent to which respondents perceive that each of these capabilities is important in enabling agility, as well as the proportion of respondents rating such an extent of importance as high, and the proportion of those rating it as low. Based on

this, each table presents such comparisons for the set of capabilities emerging from each main construct.

(A): The perceived importance of the two capabilities, which emerged from the “Dynamic Capabilities” construct: -

- Importance of “Dynamic Integration of Knowledge” (**DINTKNIM**), and
- Importance of “Dynamic Co-ordination of Resources” (**DCOOREIM**).

Trust A					Trust B				
Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement		Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree				Disagree	Agree
1. DINTKNIM	3.60	.349	0%	100%	1. DINTKNIM	3.51	.394	0%	100%
2. DCOOREIM	3.58	.289	0%	100%	2. DCOOREIM	3.53	.401	1.7%	98.3%

Table 6.25: Levels of perceived importance concerning the two capabilities of: “Dynamic Integration of Knowledge”, and “Dynamic Co-ordination of Resources”.

(B): The perceived importance of the capability, which emerged from the “Leadership and Change Management” construct: -

- Importance of “Effective Leadership and Change Management” (**LDCHGIMP**).

Trust A					Trust B				
Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement		Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree				Disagree	Agree
LDCHGIMP	3.72	.262	0%	100%	LDCHGIMP	3.58	.397	0%	100%

Table 6.26: Levels of perceived importance concerning the “Effective Leadership and Change Management” capability.

(C): The perceived importance of the three capabilities, which emerged from the “Leeway in Organisational Structure” construct: -

- Importance of “Horizontal Organic Structure” (**HORGSTIM**)
- Importance of “Decentralisation of Authority and Decision-Making” (**DECENTIM**)
- Importance of “Informal style of Management” (**INFORMIM**)

Trust A					Trust B				
Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement		Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree				Disagree	Agree
1. HORGSTIM	3.42	.449	4.5%	95.5%	1. HORGSTIM	3.36	.469	3.3%	96.7%
2. DECENTIM	3.52	.362	0%	100%	2. DECENTIM	3.42	.449	3.3%	96.7%
3. INFORMIM	2.70	.769	27.3%	72.7%	3. INFORMIM	2.86	.649	28.3%	71.7%

Table 6.27: Levels of perceived importance concerning the three capabilities of: “Horizontal Organic Structure”, “Decentralisation of Authority and Decision-Making”, and “Informal style of Management”.

(D): The perceived importance of the three capabilities, which emerged from the “Leeway in Organisational Culture” construct: -

- Importance of “Commitment to Shared Vision and Values” (**CTVNVLM**)
- Importance of “Learning and Innovative Organisational Culture” (**LEARNOIM**)
- Importance of “Tolerance to Change” (**TOLCHGIM**)

Trust A					Trust B				
Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement		Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree				Disagree	Agree
1. CTVNVLM	3.73	.336	0%	100%	1. CTVNVLM	3.54	.475	3.3%	96.7%
2. LEARNOIM	3.51	.374	0%	100%	2. LEARNOIM	3.38	.500	3.3%	96.7%
3. TOLCHGIM	3.36	.581	13.6%	86.4%	3. TOLCHGIM	3.18	.644	23.3%	76.7%

Table 6.28: Levels of perceived importance concerning the three capabilities of: “Commitment to Shared Vision and Values”, “Learning and Innovative Organisational Culture”, and “Tolerance to Change”.

(E): The perceived importance of the two capabilities, which emerged from the “Leeway in Technology” construct: -

- Importance of “Effective Provision of Information and Technology” (**EFPINFIM**)
- Importance of “Open Attitude Towards Information and Knowledge” (**ATINFIMP**)

Trust A					Trust B				
Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement		Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree				Disagree	Agree
1. EFPINFIM	3.62	.359	0%	100%	1. EFPINFIM	3.47	.408	1.7%	98.3%
2. ATINFIMP	3.34	.565	18.2%	81.8%	2. ATINFIMP	3.41	.586	10%	90%

Table 6.29: Levels of perceived importance concerning the two capabilities of: “Effective Provision of Information and Technology”, and “Open Attitude Towards Information and Knowledge”.

(F): The perceived importance of the two capabilities, which emerged from the “Environmental Scanning”: -

- “Deep Environmental Scanning” (**DEEPSCIM**)
- “Wide Environmental Scanning” (**WIDESCIM**)

Trust A					Trust B				
Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement		Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree				Disagree	Agree
1. DEEPSCIM	3.14	.425	4.5%	95.5%	1. DEEPSCIM	3.10	.623	16.9%	83.1%
2. WIDESCIM	3.0	.386	9.1%	90.9%	2. WIDESCIM	3.10	.452	12.1%	87.9%

Table 6.30: Levels of perceived importance concerning the two capabilities of: “Deep Environmental Scanning”, and “Wide Environmental Scanning”.

(G): The perceived importance of the capability, which emerged from the “Operational Flexibility” construct: -

- “Operational Flexibility” (OPERFLIM)

Trust A					Trust B				
Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement		Agility-enabling Capability	Mean	Std. Dev.	Percentage of Agreement	
			Disagree	Agree				Disagree	Agree
OPERFLIM	3.39	.533	4.5%	95.5%	OPERFLIM	3.38	.457	1.7%	98.3%

Table 6.31: Levels perceived importance concerning the capability of: “Operational Flexibility”.

6.4 Testing of Hypothesis Theorising the Relationship between the “Agility-Enabling” Capabilities and Agility

Sub-sections 6.2.1 through to 6.2.7 explained in detail how the “agility-enabling” capabilities represented attitudes, behaviours and practices, which demonstrate how agility, conceptualised as *the ability to respond and adapt to continuous and often unpredictable change*, can be enabled or facilitated in an organisation. Such an organisation is represented by healthcare service organisations (NHS Hospital Trusts) in the case of this research. Based on such an explanation of the theorised relationships between these fourteen “agility-enabling” capabilities, and how they enable the Trusts to become more agile in their response to changes in the requirements and expectations of factors in their external environment, the following hypothesis is formulated:

The fourteen “agility-enabling” capabilities will significantly explain the variance in the agility of the Trusts, in sufficiently responding and adapting to continuous and often unpredictable changes in the requirements and demands of a variety of factors in the external environment affecting their management and delivery of healthcare services.

The results of testing the above hypothesis will offer insights into how much of the variance in the agility of the Trusts in responding to changes in the external environment will be explained by the fourteen “agility-enabling” capabilities.

6.4.1 Multiple Regression Analysis

Multiple regression analysis, included as part of the Statistical Package for Social Sciences (SPSS) version 11.0, was conducted in order to test the hypothesis. Multiple regression identifies how much of the variance in the dependent or outcome variable will be explained when several independent variables are theorised to simultaneously influence it. Hence, a multiple regression analysis is conducted, by which the independent (predictor) variables are jointly regressed against the dependent (outcome) variable, in an effort designed to explain the variance in it. The individual correlations get collapsed into what is called a multiple R or multiple correlation. The square of multiple R is the amount of variance explained in the dependent variable by the predictors. When the *R Square* value, the *F* statistic, and its significance level, are known, it is possible to interpret the results from a multiple regression analysis (Hair et al., 1998; Field, 2000; Sekaran, 2000; Bryman and Cramer, 2001). The following sub-sections present the outcome of the multiple regression analysis conducted, according to the guidelines specified by the aforementioned group of writers.

6.4.1.1 The Correlation Matrix

When the variance in a dependent variable is expected to be explained by several independent variables, Sekaran (2000) highlights the important point that not only are the independent or predictor variables correlated to the dependent variable in varying degrees, but they might also be intercorrelated among themselves. Thus, Field (2000) explains that the correlation matrix is extremely useful for getting a rough idea of the *relationships between predictors and the outcome*, and for a *preliminary look for multicollinearity*. If there is no multicollinearity in the data, then there should be no substantial correlations ($R > 0.9$) between predictors (Field, 2000).

Therefore, the correlation coefficients between each of the predictor variables and the outcome, as well as those between the predictors themselves, shown in the correlation matrix, are presented and discussed as a first step towards discussing the results of the multiple regression analysis. Table 6.32 shows three things. **First**, the table shows a correlation matrix, which presents the value of the Pearson correlation coefficient between every pair of variables. **Second**, the 1-tailed significance of each correlation

is displayed. **Finally**, the number of cases contributing to each correlation ($N=80$) is shown.

Note: - **(DINTKNWL)**: “Dynamic Integration of Knowledge”; **(DCOORRES)**: “Dynamic Co-ordination of Resources”; **(EFLDCHGM)**: “Effective Leadership and Change Management”; **(HORGSTRU)**: “Horizontal Organic Structure”; **(DECENTRA)**: “Decentralisation of Authority and Decision-Making”; **(INFORMAL)**: “Informal style of Management”; **(CTSHVNVL)**: “Commitment to Shared Vision and Values”; **(LEARNORG)**: “Learning and Innovative Organisational Culture”; **(TOLCHANG)**: “Tolerance to Change”; **(EFPROINF)**: “Effective Provision of Information and Technology”; **(ATINFOKN)**: “Open Attitude Towards Information and Knowledge”; **(DEEPSCAN)**: “Deep Environmental Scanning”; **(WIDESCAN)**: “Wide Environmental Scanning”; **(OPERFLEX)**: “Operational Flexibility”.

Correlations															
	TOTCULE	DINTKNWL	DCOORRES	EFLDCHGM	HORGSTRU	DECENTRA	INFORMAL	CTSHVNVL	LEARNORG	TOLCHANG	EFPROINF	ATINFOKN	DEEPSCAN	WIDESCAN	OPERFLEX
Pearson Correl:	TOTCULE	.446	.505	.371	.401	.471	.012	.455	.425	.518	.556	.486	.495	.447	.611
	DINTKNWL	1.000	.591	.570	.404	.571	.182	.528	.549	.489	.569	.600	.445	.372	.524
	DCOORRES	.505	1.000	.697	.660	.669	.026	.638	.557	.565	.761	.552	.494	.472	.535
	EFLDCHGM	.371	.570	.697	1.000	.635	.767	.159	.781	.692	.444	.596	.558	.429	.507
	HORGSTRU	.401	.404	.660	.635	1.000	.687	.169	.602	.578	.488	.524	.515	.403	.497
	DECENTRA	.471	.571	.669	.767	.687	1.000	.150	.752	.649	.581	.633	.702	.523	.565
	INFORMAL	.012	.182	.026	.159	.169	.150	1.000	.004	.085	-.014	.028	.184	.042	-.023
	CTSHVNVL	.455	.528	.638	.781	.602	.752	.004	1.000	.657	.529	.631	.605	.541	.521
	LEARNORG	.425	.549	.557	.692	.578	.649	.085	.657	1.000	.456	.511	.511	.416	.502
	TOLCHANG	.518	.489	.565	.444	.488	.581	-.014	.529	.456	1.000	.612	.481	.484	.591
	EFPROINF	.556	.569	.761	.596	.524	.633	.028	.631	.511	.612	1.000	.587	.590	.706
	ATINFOKN	.486	.600	.552	.558	.515	.702	.184	.605	.511	.481	.587	1.000	.522	.548
	DEEPSCAN	.495	.445	.494	.429	.403	.523	.042	.541	.416	.484	.590	.522	1.000	.533
	WIDESCAN	.447	.372	.472	.525	.328	.527	-.023	.552	.505	.417	.509	.387	.447	1.000
	OPERFLEX	.611	.524	.535	.507	.497	.565	.242	.521	.502	.591	.706	.548	.533	1.000
Sig. (1-tailed)	TOTCULE	.000	.000	.000	.000	.000	.456	.000	.000	.000	.000	.000	.000	.000	.000
	DINTKNWL	.000	.000	.000	.000	.000	.053	.000	.000	.000	.000	.000	.000	.000	.000
	DCOORRES	.000	.000	.000	.000	.000	.409	.000	.000	.000	.000	.000	.000	.000	.000
	EFLDCHGM	.000	.000	.000	.000	.000	.080	.000	.000	.000	.000	.000	.000	.000	.000
	HORGSTRU	.000	.000	.000	.000	.000	.067	.000	.000	.000	.000	.000	.000	.000	.002
	DECENTRA	.000	.000	.000	.000	.000	.092	.000	.000	.000	.000	.000	.000	.000	.000
	INFORMAL	.456	.053	.409	.080	.067	.092	.484	.227	.450	.404	.051	.357	.421	.015
	CTSHVNVL	.000	.000	.000	.000	.000	.000	.484	.000	.000	.000	.000	.000	.000	.000
	LEARNORG	.000	.000	.000	.000	.000	.227	.000	.000	.000	.000	.000	.000	.000	.000
	TOLCHANG	.000	.000	.000	.000	.000	.450	.000	.000	.000	.000	.000	.000	.000	.000
	EFPROINF	.000	.000	.000	.000	.000	.404	.000	.000	.000	.000	.000	.000	.000	.000
	ATINFOKN	.000	.000	.000	.000	.000	.051	.000	.000	.000	.000	.000	.000	.000	.000
	DEEPSCAN	.000	.000	.000	.000	.000	.357	.000	.000	.000	.000	.000	.000	.000	.000
	WIDESCAN	.000	.000	.000	.000	.002	.421	.000	.000	.000	.000	.000	.000	.000	.000
	OPERFLEX	.000	.000	.000	.000	.000	.015	.000	.000	.000	.000	.000	.000	.000	.000
N	TOTCULE	80	80	80	80	80	80	80	80	80	80	80	80	80	80
	DINTKNWL	80	80	80	80	80	80	80	80	80	80	80	80	80	80
	DCOORRES	80	80	80	80	80	80	80	80	80	80	80	80	80	80
	EFLDCHGM	80	80	80	80	80	80	80	80	80	80	80	80	80	80
	HORGSTRU	80	80	80	80	80	80	80	80	80	80	80	80	80	80
	DECENTRA	80	80	80	80	80	80	80	80	80	80	80	80	80	80
	INFORMAL	80	80	80	80	80	80	80	80	80	80	80	80	80	80
	CTSHVNVL	80	80	80	80	80	80	80	80	80	80	80	80	80	80
	LEARNORG	80	80	80	80	80	80	80	80	80	80	80	80	80	80
	TOLCHANG	80	80	80	80	80	80	80	80	80	80	80	80	80	80
	EFPROINF	80	80	80	80	80	80	80	80	80	80	80	80	80	80
	ATINFOKN	80	80	80	80	80	80	80	80	80	80	80	80	80	80
	DEEPSCAN	80	80	80	80	80	80	80	80	80	80	80	80	80	80
	WIDESCAN	80	80	80	80	80	80	80	80	80	80	80	80	80	80
	OPERFLEX	80	80	80	80	80	80	80	80	80	80	80	80	80	80

Table 6.32: The Correlation Matrix for the Fourteen “Agility-Enabling” Capabilities and Agility

With regard to the relationships between predictors and the outcome, 13 out of the 14 “Agility-Enabling” Capabilities had a significant positive correlation with the Current Level of Agility, at which the Trusts are responding to changes in the requirements of the external environment affecting their management and delivery of healthcare services (R between these predictor variables “capabilities” and the outcome variable “current agility” ranged from 0.371 to 0.611, with the correlations of all these 13 capabilities being significant, $p < 0.05$). The only capability found not to correlate significantly with Current Level of Agility is Informal Style of Management INFORMAL ($R = 0.012$, $p = .456$, which is > 0.05). This result supports the proposition that all but one of the 14 “agility-enabling” capabilities have significant positive relationships with agility, in that each has a significant correlation with agility.

However, among all of the predictors, Operational Flexibility OPERFLEX correlates best with the outcome “Current Level of Agility”, in that it has the highest positive correlation with it, which is also significant: ($R = 0.611$, $p < 0.05$). Therefore, it is likely that this variable will best predict and/or explain the variance in the Current Level of Agility.

The correlation matrix did not show any significant correlation coefficient between two predictors that was > 0.9 . The highest correlation is between “Effective Leadership and Change Management” EFLDCHGM and “Commitment to Shared Vision and Values” CTSHVNVL, which is significant ($R = 0.781$, $p < 0.05$).

6.4.1.2 Summary of the Multiple Regression Model

This section describes the overall multiple regression model and, thus, explains whether the model is successful in explaining what might contribute to the agility of the Trusts in better responding and adapting to changes in the external environment affecting them. Table 6.33 presents the model summary as produced by SPSS. This includes model 1, which refers to when all fourteen predictors are used. The model summary provides some very important information about the model: the values of R , R Square and the adjusted R Square. The model summary table indicates what the dependent variable (outcome) is, and what the predictors are in that model.

Model Summary ^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.704 ^a	.496	.387	.3366	.496	4.563	14	65	.000	2.164

a. Predictors: (Constant), OPERFLEX, INFORMAL, WIDESCAN, HORGSTRU, DINTKNWL, DEEPSCAN, TOLCHANG, ATINFOKN, LEARNORG, DCOORRES, CTSHVNL, EFLDCHGM, EFPROINF, DECENTRA

b. Dependent Variable: TOTCULEA

Table 6.33: The Multiple Regression Model Summary

- ◆ In the column labelled R is the value of the multiple correlation coefficient between the predictors and the outcome. **Multiple R** is often referred to as the correlation between the observed values of Y (outcome) and the values of Y predicted by the Multiple Regression model. Therefore, large values of the multiple R represent a large correlation between the predicted and observed values of the outcome. In fact, a multiple R of 1 represents a situation in which the model perfectly predicts the observed data. As such, multiple R is a gauge of how well the model predicts the observed data.

The value of multiple R for this model is 0.704, which is an indication that the model provides a reasonably good explanation of the observed values of the outcome variable: current level of agility (Hair et al., 1998).

- ◆ The next column gives the value of **R Square**, which is a measure of how much of the variability in the outcome is accounted for by the predictors included in the model. This value is 0.496, which means that the 14 “agility-enabling” capabilities included as predictors in the model account for 49.6% of the variation in the current level of agility in responding to environmental changes (almost half of the variation in agility). Therefore, the practice of these capabilities accounts for nearly half of the ability of the Trusts in responding and adapting to changes in the requirements and demands placed on them, by a variety of factors in the external environment affecting the management and delivery of their healthcare services.

The adjusted R Square gives an idea of how well the model generalises and ideally it is better if the value of the adjusted R Square is the same as, or close to the value of R Square. In the case of this model, the difference between R Square and Adjusted R Square is 10.9% ($0.496 - 0.387 = 0.109$). This shrinkage means that if the model were

derived from the population rather than a sample, it would account for approximately 10.9% less variance in the outcome. The value of the adjusted R Square (0.387) is somewhat different from the observed value of R Square (0.496), which has a minimising effect upon the cross-validity of this model.

- ◆ The change statistics explain the change in the F -ratio resulting from constructing the multiple regression model. The F -ratio is a measure of how much the model has improved the prediction of the outcome, compared to the level of inaccuracy of the model. In this way, a good model should have a large F -ratio (greater than one at least). It can be seen from table 6.33 that the model causes R Square to change from zero to 0.496, and this change in the amount of variance explained gives rise to an F -ratio of 4.563, which is significant ($p < 0.05$). In this way, the change statistics illustrate the difference made by adding new predictors to the model.
- ◆ Finally, the Durbin-Watson statistic checks whether the assumption of independent errors is tenable. However, the Durbin-Watson Statistic is only used for time series data, i.e. the data set being the values of the independent variables at fixed intervals of time. It checks the independence of errors from time period to the following time period. Since the independent variables are measured in this research using an ordinal Likert-type scale, the Durbin-Watson Statistic is not relevant here.

Table 6.34 presents the next part of the output, which contains an analysis of variance (ANOVA) that tests whether the model is significantly better at predicting the outcome than using the mean as a ‘best guess’. Specifically, the F -ratio represents the ratio of the improvement in prediction as a result of fitting the model, relative to the inaccuracy that still exists in the model.

- ◆ **The F -ratio** is calculated by dividing the *average improvement in prediction by the model* (MS_M) by the *average difference between the model and the observed data* (MS_R). If the improvement due to fitting the regression model is much greater than the inaccuracy within the model, then the value of F will be greater than 1, and SPSS calculates the exact probability of obtaining the value of F by

chance. For the model, the F -ratio is 4.563, which is significant ($p < 0.05$) and, thus, very unlikely to have happened by chance. These results can be interpreted as meaning that the model significantly improved our ability to predict the outcome variable (because the F -ratio is significant).

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.240	14	.517	4.563	.000 ^a
	Residual	7.366	65	.113		
	Total	14.606	79			

a. Predictors: (Constant), OPERFLEX, INFORMAL, EXTINFCO, HORGSTRU, DINTKNWL, DEALPROB, TOLCHANG, ATINFOKN, LEARNORG, DCOORRES, CTSHVNVL, EFLDCHGM, EFPROINF, DECENTRA

b. Dependent Variable: TOTCULEA

Table 6.34: Analysis of Variance, for the Multiple Regression Model

Note that the ANOVA table gives the value of the sum of squares for the model (SS_M), which represents the improvement in prediction resulting from fitting a regression line to the data rather than using the mean as an estimate of the outcome. This value is 7.240. The table also gives the value of the residual sum of squares (SS_R), which represents the total difference between the model and the observed data. This value is 7.366.

For each of these terms (SS_M) and (SS_R), the degrees of freedom (df) for each term are also provided. In the case of the improvement due to the model, this value is equal to the number of predictors (14 predictors in the case of this model), and for the SS_R it is the number of observations (80) minus the number of coefficients in the regression model. The model has 15 coefficients (one for the constant and fourteen for the predictors). Therefore, the model has 65 degrees of freedom related to SS_R . The average sum of squares or Mean Square (MS) is then calculated for each term, by dividing the SS by the df . The F -ratio is calculated by dividing the average improvement in prediction by the model (MS_M) by the average difference between the model and the observed data (MS_R).

6.4.1.3 Model Parameters

The purpose of the previous sections was to determine whether or not the model has improved the ability to explain the outcome variable. The results of the analysis have demonstrated that the multiple regression model, which consists of the fourteen “agility-enabling” capabilities, has significantly improved our ability to explain the outcome variable (level of agility in responding to environmental change). The next

part of the SPSS output, which is presented in table 6.35, is concerned with the parameters of the multiple regression model.

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics		
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF	
1	(Constant)	1.311	.237										
	DINTKNWL	3.749E-02	.087	.056	.432	.667	-.136	.211	.446	.053	.038	.461	2.171
	DCOORRES	.123	.120	.175	1.028	.308	-.116	.363	.505	.126	.091	.267	3.743
	EFLDCHGM	-.148	.119	-.224	-1.240	.220	-.385	.090	.371	-.152	-.109	.238	4.198
	HORGSTRU	2.180E-02	.096	.032	.227	.821	-.170	.213	.401	.028	.020	.390	2.567
	DECENTRA	-1.38E-02	.120	-.021	-.115	.909	-.254	.227	.471	-.014	-.010	.238	4.206
	INFORMAL	-5.18E-02	.060	-.087	-.870	.387	-.171	.067	.012	-.107	-.077	.772	1.295
	CTSHVNVL	1.386E-02	.099	.024	.141	.889	-.183	.211	.455	.017	.012	.273	3.660
	LEARNORG	2.753E-02	.086	.044	.320	.750	-.144	.199	.425	.040	.028	.416	2.402
	TOLCHANG	4.709E-02	.076	.078	.618	.539	-.105	.199	.518	.076	.054	.481	2.080
	EFPROINF	-3.64E-02	.110	-.057	-.330	.742	-.257	.184	.556	-.041	-.029	.256	3.901
	ATINFOKN	7.171E-02	.082	.121	.876	.384	-.092	.235	.486	.108	.077	.409	2.442
	DEEPSCAN	6.502E-02	.083	.094	.787	.434	-.100	.230	.495	.097	.069	.546	1.831
	WIDESCAN	.116	.075	.180	1.557	.124	-.033	.266	.447	.190	.137	.579	1.728
	OPERFLEX	.283	.104	.392	2.730	.008	-.076	.490	.611	.321	.240	.376	2.656

a. Dependent Variable: TOTCULEA

Table 6.35: Coefficients of the Multiple Regression Model

Before interpreting the parameters shown in table 6.35, it is important to highlight that in multiple regression, the model takes the form of an equation that predicts the value of the outcome variable Y from a combination of predictor variables, each multiplied by its own respective coefficient, plus a residual term.

$$Y = B_0 + B_1X_1 + B_2X_2 + \dots + B_{14}X_{14} + \sum_i$$

These coefficients are referred to as *B* values, which indicate the individual contribution of each predictor to the model. If we replace the *B* values into the above equation, the model can be defined. In this way, the *B* values tell us about the relationship between the current level of agility in responding to environmental changes and each predictor (agility-enabling capability). If the value is positive, this indicates a positive relationship between the predictor and the outcome, whereas a negative coefficient represents a negative relationship. Viewing the *B* values under the first column, Operational Flexibility OPERFLEX has the highest positive relationship with the outcome variable: Current Level of Agility (*B* = 0.283). Thus, as the practice of Operational Flexibility increases on the part of the Trusts, so does their agility in responding to changes in the external environment affecting them. Similarly, Wide Environmental Scanning WIDESCAN (*B* = 0.116), which refers to the continuous collection of information about as many factors in the external environment as

possible, and Dynamic Co-ordination of Resources DCOORRES ($B = 0.123$), were also found to have a positive relationship with the outcome variable. In this sense, the B values tell us to what degree each predictor affects the outcome if the effects of all other predictors are held constant.

- ◆ In this context, ***t*-tests** are derived in order to test whether a B value is significantly different from zero. Thus, *t*-tests are considered as measures of whether the predictor is making a significant contribution to the model. Therefore, if the *t*-test associated with a B value is significant (if the value in the column labelled *Sig.* is less than 0.05) then the predictor is making a significant contribution to the model. The smaller the value of *Sig.* (and the larger the value of *t*) the greater the contribution of that predictor. For this model, only one predictor, which is Operational Flexibility OPERFLEX ($t = 2.730$, $p < 0.05$), emerged as a significant predictor of the current agility of the Trusts in better responding and adapting to changes in the external environment affecting them.

The standardised versions of the B values are in many ways easier to interpret, because they are not dependent on the units of measurement of the variables. The standardised beta values provided by SPSS and presented in table 6.35 tell us the number of standard deviations that the outcome will change, as a result of one standard deviation change in the predictor. All of the standardised beta values are measured in standard deviation units and so are directly comparable. Therefore, they provide a better insight into the importance of a predictor in the model. From studying table 6.35, it is seen that Operational Flexibility OPERFLEX has the highest standardised beta value (0.392), indicating that this variable has the highest degree of importance in the model, compared with the other predictors. This supports the result reached through the *t*-test, in that Operational Flexibility also emerged as the most significant predictor of agility.

6.4.1.4 The Confidence Intervals of the Unstandardised Beta Values

The benefit from having the confidence interval of the unstandardised beta values is illustrated in a situation, in which 100 samples of data measuring the same variables as in the study's model, were collected. For each sample, a regression model would be

created to represent the data. If the model is reliable then the expectation is that very similar parameters may well be found in both models. Therefore, each sample should produce approximately the same beta values. The confidence interval of the unstandardised beta values indicates the boundaries within which the B values of 95% of samples would fall. Therefore, if 100 samples were collected, these samples would give rise to B values within the boundaries of the confidence interval.

In a good model the confidence intervals should be small indicating that 95% of samples would produce parameters very similar to the ones obtained. A very bad model is expected to have confidence intervals that cross zero, indicating that in some samples the predictor has a negative relationship to the outcome, whereas in others it has a positive relationship. In this study's model, the best predictor (Operational Flexibility OPERFLEX) has a confidence interval that ranges from 0.076 to 0.490 and, thus, does not cross zero. This indicates that although the interval for the significant predictor in the model is wide, which lessens the representativeness of its parameter, nevertheless, it is still significant.

6.4.1.5 Correlations and Collinearity Diagnostics

The Correlations Category shown in table 6.35 includes three types of correlations: -

- The *zero-order* correlations are the simple Pearson's correlation coefficients.
- The *partial* correlations represent the relationships between each predictor and the outcome variable, controlling for the effects of the other predictors.
- The *part* correlations represent the relationship between each predictor and the outcome, controlling for the effect that the other predictors have on the outcome. In effect, these part correlations represent the *unique relationship* that each predictor has with the outcome.

In all of these types of correlations, the predictor: Operational Flexibility OPERFLEX emerged as the one that had the strongest relationship with the outcome: Current Agility in responding to environmental changes (zero-order: 0.611; partial: 0.321; part: 0.240).

The SPSS output presented in table 6.35 provides measures of whether there is collinearity in the data. Specifically it provides two main collinearity diagnostics: -

- The Variance Inflation Factor (VIF): This indicates whether a predictor has a strong linear relationship with the other predictors.
- Related to the VIF is the tolerance statistic, which is its reciprocal (1/VIF).

Field (2000) provides the following guidelines in interpreting these two scores:

- If the largest VIF is greater than 10 then there is cause for concern (Myers, 1990; Bowerman and O’Connell, 1990).
- Tolerance below 0.1 indicates a serious problem.
- Tolerance below 0.2 indicates a potential problem.

For this study’s model, the VIF values are all well below 10, and the tolerance statistics all well above 0.2. Therefore, these results indicate that there is no collinearity within the data.

6.4.1.6 Casewise Diagnostics

SPSS produces a summary table of the residual statistics and these should be examined for extreme cases. SPSS output presented in table 6.36 shows any cases that have a standardised residual less than -2 or greater than 2 . According to Field (2000), 95% of cases in an ordinary sample are expected to have standardised residuals within ± 2 . Since the sample in this study used for the purposes of the multiple regression analysis is 80 (see table 6.32), it is reasonable to expect about 4 cases (80 multiplied by 5%) to have standardised residuals outside of these limits. From table 6.36, there are only 2 cases (2.5%) that are outside of these limits, which are cases 32 and 41. Therefore, this study’s sample appears to conform to what is expected for a fairly accurate model. In other words, these diagnostics give no real cause for concern.

Casewise Diagnostics^a

Case Number	Std. Residual	TOTCULEA	Predicted Value	Residual
32	2.483	3.35	2.5141	.8359
41	2.501	3.46	2.6195	.8421

a. Dependent Variable: TOTCULEA

Table 6.36: Casewise Diagnostics

6.4.1.7 Checking Assumptions

As a final stage in the analysis, the two assumptions of homoscedasticity and linearity are checked. Figure 6.1 presents a plot of the Regression Standardised Residuals against the Regression Standardised Predicted Values. The graph should look like a random array of dots evenly dispersed around zero. If this graph funnels out, then the chances are that there is heteroscedasticity in the data. If there is any sort of curve in this graph then the chances are that the data have broken the assumption of linearity.

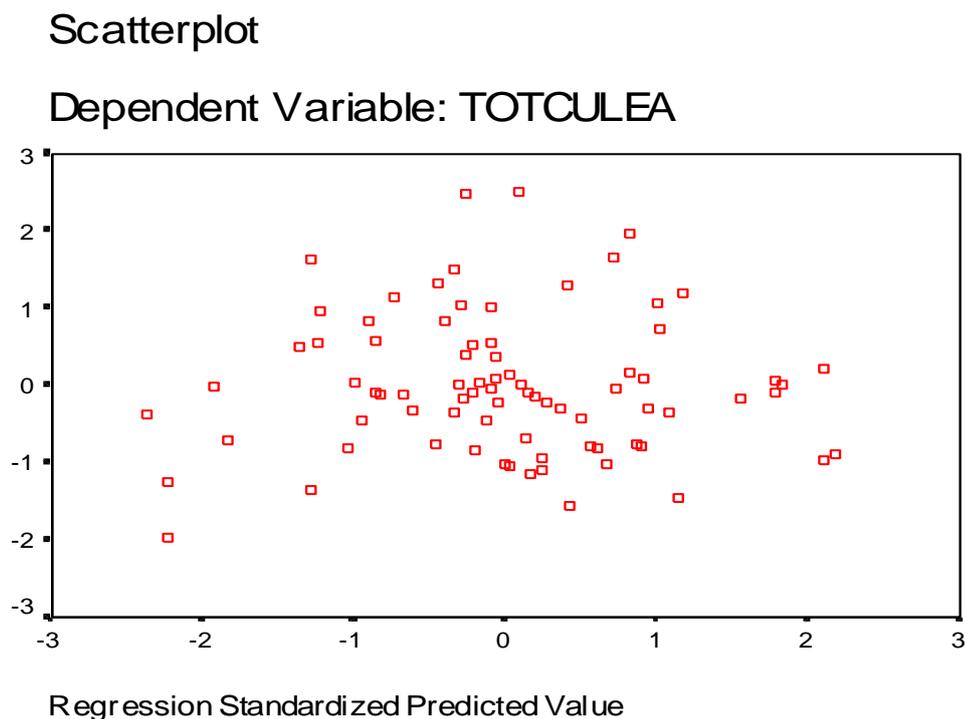


Figure 6.1: Plot of Standardised Residuals against Standardised Predicted Values/Multiple Regression

Note from examining the scatterplot shown in figure 6.1 how the points are randomly and evenly dispersed throughout the plot. This pattern is indicative of a situation in which the assumptions of linearity and homoscedasticity have been met.

To test the normality of residuals, the histogram and normal probability plot of the study's data shown in figure 6.2 should be examined.

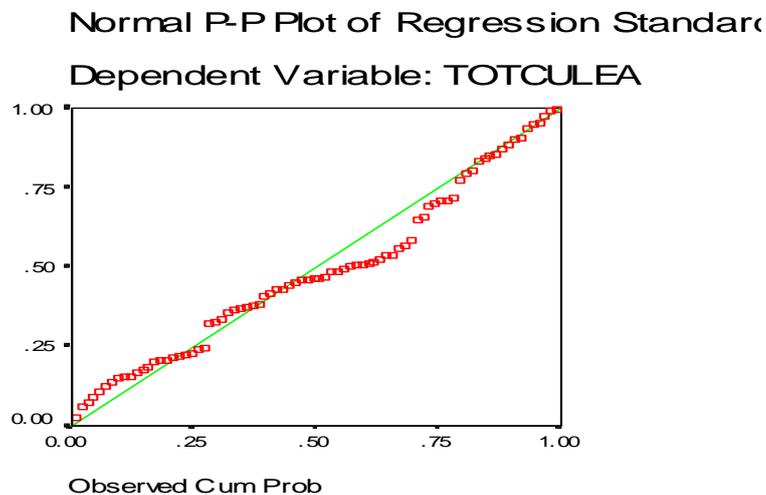
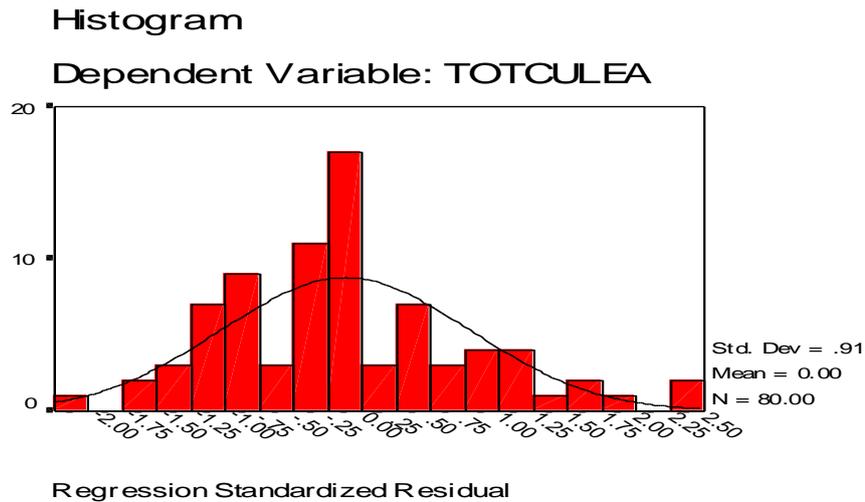


Figure 6.2: Histogram and Normal P-P Plots/Multiple Regression

The histogram should look like a normal distribution (a bell-shaped curve). SPSS draws a curve on the histogram to show the shape of this distribution. The histogram in figure 6.2 shows that the distribution is almost normal. This is in contrast to a situation in which a histogram exhibits a non-normal distribution that is extremely skewed (unsymmetrical).

The normal probability plot also shows up deviations from normality. The straight line in this plot represents a normal distribution, and the points represent the observed residuals. Therefore, in a perfectly normally distributed data set, all points will lie on the line. For the normal probability plot shown in figure 6.2, it can be seen that in general, the observed residuals follow the line. Although there are some deviations away from that line, these are not far from it and so the overall trend for these residuals is that they follow the line representing a normal distribution.

6.4.2 Stepwise Regression

The correlation matrix presented in table 6.32 shows that most independent variables (13 out of 14) are significantly correlated with each other, evidenced by positive correlation coefficients each significant at the 5% level, which is a sign of possible multicollinearity. However, sub-section 6.4.1.5 checks for possible collinearity within the data, through using VIF measures, and concludes that there is no collinearity within the data. On the other hand, table 6.35 shows the confidence intervals for the beta coefficients in the regression model. For all but one variable, the upper and lower bounds of the confidence intervals have differing signs. This is an indication of multicollinearity, which affects the reliability of the beta coefficients. In turn, this affects the reliability of the fitted model in investigating the influence of each independent variable on the dependent variable.

Therefore, in order to get over the problem of multicollinearity, stepwise regression is conducted, as the stepwise modelling process will usually preclude an additional variable going into the model, which is significantly correlated with a variable already in the model (Hair et al., 1998; Field, 2000). It is possible then to interpret the *B* coefficients in the fitted regression equation, to see how changes in each of the independent variables in the model affects the dependent variable.

6.4.2.1 Summary of the Stepwise Regression Model

Table 6.37 presents the stepwise regression model summary as produced by SPSS. This includes **Model One**, which refers to when “Operational Flexibility” is used, and **Model Two**, when “Operational Flexibility” and “Wide Environmental Scanning” are used.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df 1	df 2	Sig. F Change	
1	.611 ^a	.373	.365	.3426	.373	46.463	1	78	.000	
2	.652 ^b	.425	.410	.3302	.052	6.932	1	77	.010	1.984

a. Predictors: (Constant), OPERFLEX

b. Predictors: (Constant), OPERFLEX, WIDESCAN

c. Dependent Variable: TOTCULEA

Table 6.37: Stepwise Regression Model Summary

The meanings of Multiple R, R Square, Adjusted R, F Change, as well as *F*-ratio were explained earlier in sub-section 6.4.1.2 concerned with multiple regression analysis. These are adopted in sub-section 6.4.2.1 in interpreting the outcomes of the stepwise regression conducted.

- ◆ The value of multiple R for Model One is 0.611, and for Model Two 0.652. Both values indicate that models one and two provide a reasonably good prediction or explanation of the observed values of the outcome variable (current level of agility).
- ◆ For Model One, R Square is 0.373, which means that “Operational Flexibility” included as a predictor in the model accounts for 37.3% of the variation in the current level of agility in responding to environmental changes. For Model Two, the value of R Square is 0.425, which means that when both: “Operational Flexibility” and “Wide Environmental Scanning” are used as predictors, they collectively account for 42.5% of the variation of agility.
- ◆ For each of the two models, the difference between R Square and Adjusted R Square is small (**Model One**: R Square = 0.373; Adjusted R Square = 0.365 / **Model Two**: R Square = 0.425; Adjusted R Square = 0.410), which enhances the cross-validity of both models.
- ◆ It can be seen from table 6.37 that Model One (consisting of operational flexibility as the predictor of agility) gives an *F*-ratio of 46.463, which is significant ($p < 0.05$). Model Two (consisting of operational flexibility and wide environmental scanning) gives an *F*-ratio of 6.932, which is also significant ($p < 0.05$). From these results, it is concluded that although both models provide an improvement in predicting or explaining the outcome variable (agility), nevertheless, Model One results in a more improved prediction of the outcome (agility), compared with Model Two.

ANOVA^c

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.453	1	5.453	46.463	.000 ^a
	Residual	9.154	78	.117		
	Total	14.606	79			
2	Regression	6.209	2	3.104	28.464	.000 ^b
	Residual	8.398	77	.109		
	Total	14.606	79			

a. Predictors: (Constant), OPERFLEX

b. Predictors: (Constant), OPERFLEX, WIDESCAN

c. Dependent Variable: TOTCULEA

Table 6.38: Analysis of Variance, for the Stepwise Regression

Table 6.38 presents the next part of the output, which contains an Analysis of Variance (ANOVA) that tests whether the model is significantly better at predicting the outcome than using the mean as a ‘best guess’. Specifically, for Model One, the *F*-ratio is 46.463, which is significant ($p < 0.05$). For Model Two, the *F*-ratio is 28.464, which is also significant ($p < 0.05$). These results can be interpreted as meaning that both models significantly improved our ability to predict the outcome variable (because the *F*-ratio is significant), with Model One (consisting of operational flexibility as the predictor variable) having significantly improved the ability to predict agility better than Model Two (consisting of operational flexibility as well as wide environmental scanning).

6.4.2.2 Model Parameters

The purpose of the previous sections was to determine whether or not the model has improved the ability to predict the outcome variable. The results of the analysis have demonstrated that both models have significantly improved our ability to predict or explain the outcome variable (level of agility in responding to environmental change). In particular, the first model had a better ability to explain agility, through Operational Flexibility. The next part of the SPSS output, which is presented in table 6.39, is concerned with the parameters of the two models.

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics		
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF	
1	(Constant)	1.609	.149		10.777	.000	1.312	1.906						
	OPERFLEX	.441	.065	.611	6.816	.000	.312	.570	.611	.611	.611	1.000	1.000	
2	(Constant)	1.374	.169		8.116	.000	1.037	1.712						
	OPERFLEX	.371	.068	.515	5.487	.000	.237	.506	.611	.530	.474	.848	1.179	
	WIDESCAN	.160	.061	.247	2.633	.010	.039	.280	.447	.287	.228	.848	1.179	

^a. Dependent Variable: TOTCULEA

Table 6.39: Coefficients of the Stepwise Regression Model

Viewing the *B* value(s) for each of the two models that resulted from the stepwise regression analysis, it can be seen that Operational Flexibility OPERFLEX has the highest positive relationship with the outcome variable in each of the two models developed: (Model One: $B = 0.441$, in which Operational Flexibility is the only predictor variable; Model Two: B for Operational Flexibility = 0.371, while B for Wide Environmental Scanning = 0.160). Thus, it is concluded that an increase in the practice of Operational Flexibility results in an increase in the agility of the Trusts, which is greater than that resulting from an increase in the practice of Wide Environmental Scanning. In this sense, the *B* values tell us to what degree each predictor affects the outcome if the effects of all other predictors are held constant.

It was indicated in sub-section **6.4.1.3** that *t*-tests are considered as measures of whether the predictor is making a significant contribution to the model. For Model One, in which there is only one predictor (Operational Flexibility), $t = 6.816$ and $p < 0.05$. This means that operational flexibility is making a significant contribution to explaining agility in Model One. As for Model Two, both predictor variables emerged as significant predictors of agility (Operational Flexibility: $t = 5.487$ and $p < 0.05$; Wide Environmental Scanning: $t = 2.633$ and $p < 0.05$).

The standardised beta values provided by SPSS and presented in table 6.39 provide a better insight into the importance of a predictor in the model. From studying table 6.39, it is seen that Operational Flexibility OPERFLEX has the highest standardised beta value in both models (Model One: Standardised beta coefficient = 0.611, $p < 0.05$; Model Two: Standardised beta coefficient = 0.515, $p < 0.05$), indicating that this variable has the highest degree of importance in both models. This supports the result

reached through the *t*-test, in that Operational Flexibility also emerged as the most significant predictor of agility.

6.4.2.3 The Confidence Intervals of the Unstandardised Beta Values

The confidence intervals of the unstandardised beta values for the two models that have resulted from the stepwise regression, and are presented in table 6.39, are interpreted according to the guidelines explained in sub-section 6.4.1.4. In Model One, Operational Flexibility OPERFLEX has a confidence interval that ranges from 0.312 to 0.570, which indicates the reliability of the coefficient of this predictor. In Model Two, OPERFLEX has a confidence interval that ranges from 0.237 to 0.506, and Wide Environmental Scanning WIDESCAN has a confidence interval that ranges from 0.039 to 0.280. These results indicate the reliability of the coefficients of the predictors included in both models.

6.4.2.4 Correlations and Collinearity Diagnostics

Table 6.39 provides a “correlations category”, which includes three types of correlations: *zero-order* correlations, *partial* correlations, and *part* correlations. In all of these types of correlations, the predictor: Operational Flexibility OPERFLEX, representing Model One, emerged as the one that had the strongest relationship with the outcome: Current Agility in responding to environmental changes (zero-order: 0.611; partial: 0.611; part: 0.611). In addition, the SPSS output presented in table 6.39 provides measures of whether there is collinearity in the data. For this study’s model, the VIF values are all well below 10, and the tolerance statistics all well above 0.2. Therefore, these results indicate that there is no collinearity within the data.

6.4.2.5 Casewise Diagnostics

SPSS produces a summary table of the residual statistics and these should be examined for extreme cases. SPSS output presented in table 6.36 shows any cases that have a standardised residual less than -2 or greater than 2 . According to Field (2000), 95% of cases in an ordinary sample are expected to have standardised residuals within ± 2 . Since the sample in this study used for the purposes of the multiple regression

analysis is 80 (see table 6.32), it is reasonable to expect about 4 cases (80 multiplied by 5%) to have standardised residuals outside of these limits. From table 6.40, there are only 4 cases (2.5%) that are outside of these limits, which are cases 9, 26, 32, and 41. Therefore, this study's sample appears to conform to what is expected for a fairly accurate model. In other words, these diagnostics give no real cause for concern.

Casewise Diagnostics^a

Case Number	Std. Residual	TOTCULEA	Predicted Value	Residual
9	2.159	3.50	2.7871	.7129
26	-2.178	1.25	1.9693	-.7193
32	2.669	3.35	2.4685	.8815
41	2.461	3.46	2.6490	.8126

a. Dependent Variable: TOTCULEA

Table 6.40: Casewise Diagnostics for the Stepwise Regression

6.4.2.6 Checking Assumptions

As a final stage in the analysis, the two assumptions of homoscedasticity and linearity are checked. Figure 6.3 presents a plot of the Regression Standardised Residuals against the Regression Standardised Predicted Values. The graph should look like a random array of dots evenly dispersed around zero. If this graph funnels out, then the chances are that there is heteroscedasticity in the data. If there is any sort of curve in this graph then the chances are that the data have broken the assumption of linearity.

Scatterplot

Dependent Variable: TOTCULEA

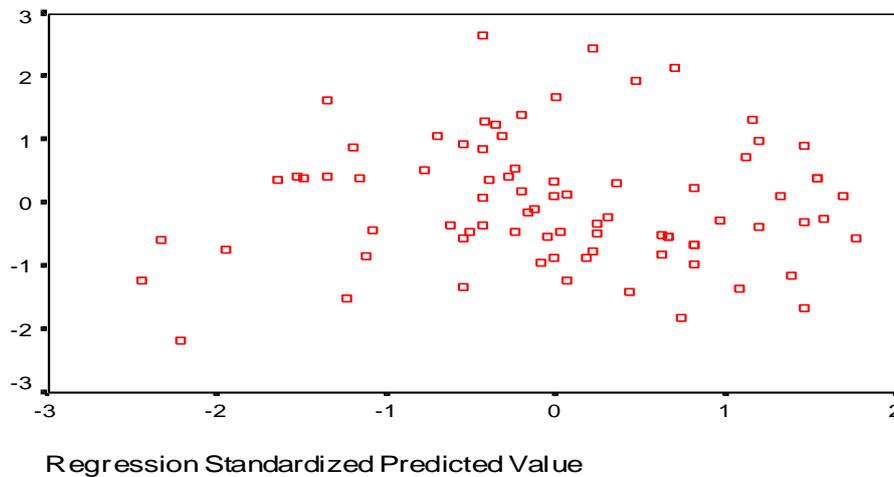


Figure 6.3: Plot of Standardised Residuals against Standardised Predicted Values/Stepwise Regression

Note from examining the scatterplot shown in figure 6.3 how the points are randomly and evenly dispersed throughout the plot. This pattern is indicative of a situation in which the assumptions of linearity and homoscedasticity have been met.

To test the normality of residuals, the histogram and normal probability plot of the study's data shown in figure 6.4 should be examined.

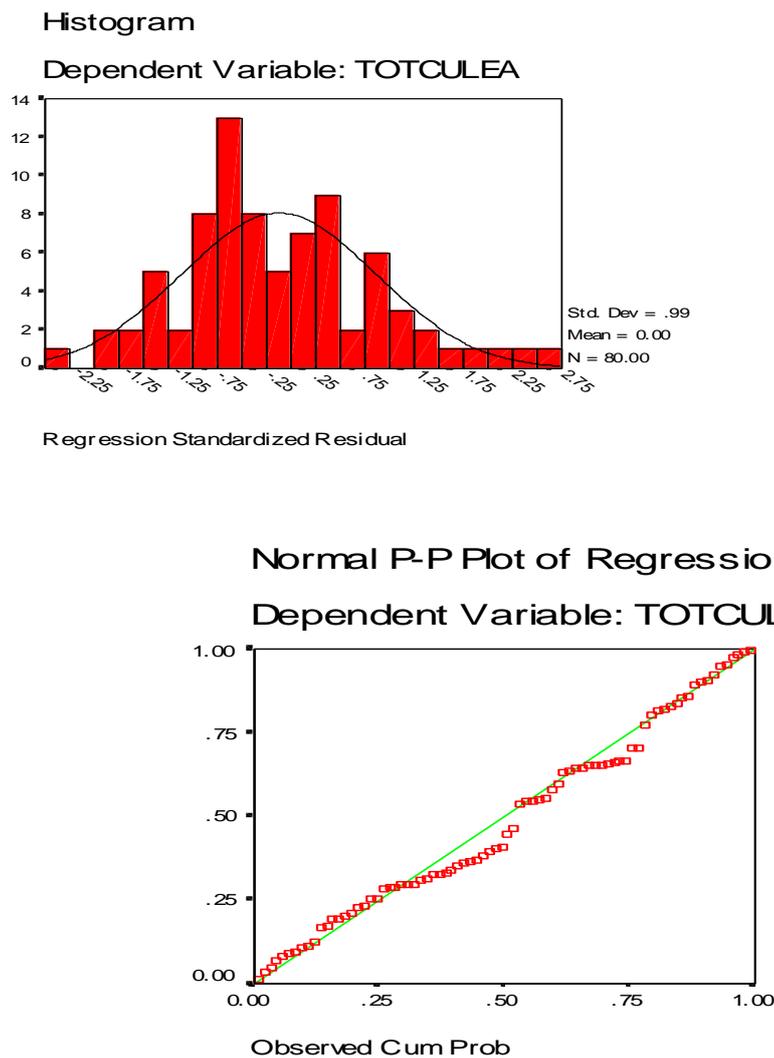


Figure 6.4: Histogram and Normal P-P Plots/Stepwise Regression

The histogram should look like a normal distribution (a bell-shaped curve). SPSS draws a curve on the histogram to show the shape of this distribution. The histogram in figure 6.4 shows that the distribution is almost normal. This is in contrast to a situation in which a histogram exhibits a non-normal distribution that is extremely skewed (unsymmetrical).

The normal probability plot also shows up deviations from normality. The straight line in this plot represents a normal distribution, and the points represent the observed residuals. Therefore, in a perfectly normally distributed data set, all points will lie on the line. For the normal probability plot shown in figure 6.4, it can be seen that in general, the observed residuals follow the line. Although there are some deviations away from that line, these are not far from it and so the overall trend for these residuals is that they follow the line representing a normal distribution.

6.4.3 Findings from Testing the Overall Hypothesis

Given the outcomes of the multiple regression analysis conducted into the relationship between the fourteen “agility-enabling” capabilities (independent/predictor variables), and the current level of agility in responding to environmental changes (dependent/outcome variable), the following findings have emerged: -

- ◆ The fourteen “agility-enabling” capabilities represented in the multiple regression model, have significantly explained the agility of the Trusts in responding to environmental changes.

- ◆ The model has confirmed the significant contribution of the set of predictors (14 “agility-enabling” capabilities) in explaining the agility of the Trusts in responding to external environmental change, in that such capabilities have significantly explained 49.6% of the variance in the current level of agility in responding to environmental changes (almost half of the variation in agility) (R Square = 0.496; $F = 4.563$, $p < 0.05$). Thus, the hypothesis is substantiated. Based on this result, the practise of these capabilities significantly explains / accounts for nearly half of the ability of the Trusts to respond and adapt to changes in the requirements and demands placed on them, by a variety of factors in the external environment affecting the management and delivery of their healthcare services and, thus, thrive in such an environment.

- ◆ Only one predictor, which is Operational Flexibility OPERFLEX, emerged as a significant predictor of the current agility of the Trusts in better responding and adapting to changes in the external environment affecting them ($t = 2.730$, $p <$

0.05). In addition, Operational Flexibility OPERFLEX emerged as having the highest standardised beta value (0.392), indicating that this variable has the highest degree of importance in the model, compared with the other predictors. This supports the result reached through the significance of the *t*-test, in that Operational Flexibility also emerged as the most significant predictor of agility.

- ◆ Due to a potential problem of multicollinearity, caused by the observation that most of the “agility-enabling” capabilities (13 out of 14) are significantly correlated with each other (see table 6.32), “*stepwise regression*” was conducted. This is because the stepwise modelling process will usually preclude an additional variable going into the model, which is significantly correlated with a variable already in the model (Hair et al., 1998; Field, 2000). Two models resulted from the stepwise regression: **Model One**, which refers to when “Operational Flexibility” is used, and **Model Two**, when “Operational Flexibility” and “Wide Environmental Scanning” are used. Model One (consisting of operational flexibility as the predictor of agility) gives an *F*-ratio of 46.463, which is significant ($p < 0.05$). Model Two (consisting of operational flexibility and wide environmental scanning) gives an *F*-ratio of 28.464, which is also significant ($p < 0.05$). These results can be interpreted as meaning that both models significantly improved the ability to explain the outcome variable (agility), because the *F*-ratio is significant for each model, with Model One (consisting of operational flexibility as the only predictor variable) resulting in a more improved explanation of the outcome (agility), compared with Model Two (consisting of operational flexibility and wide environmental scanning as the predictor variables).
- ◆ Therefore, the results of the stepwise regression have demonstrated that the two aforementioned models have significantly improved the ability to explain the agility of the Trusts in responding to change. However, the first model had a better ability to explain agility, through Operational Flexibility.
- ◆ Also, the values of the standardised beta coefficients presented in table 6.39 have shown that Operational Flexibility OPERFLEX representing Model One has the highest significant standardised beta value (standardised beta coefficient = 0.611,

$t = 6.816, p < 0.05$). Operational Flexibility also emerged as the predictor with the highest significant standardised beta value in Model Two (standardised beta coefficient = 0.515, $t = 5.487, p < 0.05$), compared with Wide Environmental Scanning WIDESCAN (standardised beta coefficient = .247, $t = 2.633, p < 0.05$). This indicates that Operational Flexibility has the highest degree of importance in both models, in that it emerged as the most significant predictor of agility.

- ◆ In this way, it has become clear from the results of the multiple regression analysis as well as the stepwise regression analysis that Operational Flexibility has emerged as the critical factor in explaining the ability of the Trusts to respond and adapt to changes in the requirements and demands of their external environments, in an agile manner and, thus, thrive in the midst of such changes. Hence, it is recommended that more investment and attention is to be directed towards improving the ability of the service delivery system in the hospitals, which the Trusts comprise, to better adjust, adapt and, thus, respond flexibly to changes in the pressures and requirements posed by key stakeholders in the external environment (e.g. demand and requirements of patients, Health Authorities, Government/DoH, etc.). Such an improvement of operational flexibility, thus, is argued to be important in helping such hospital Trusts to become more agile in responding to these changes.

The improvement of operational flexibility entails paying particular attention to the following, in response to any changes in the demands and requirements posed on the hospitals' healthcare service delivery systems:

- Adjusting the level or number of services that the Trust delivers.
- Adjusting the type and mix of services that the Trust provides or delivers.
- Adapting and responding to fluctuations in the volume of demand posed on the healthcare services provided by the Trust.
- Introducing new healthcare services, in response to changing requirements and expectations.
- Being able to quickly and easily add to and expand the capacity of the hospital, in terms of additional professional staff, equipment, beds, etc., in response to unpredictable changes in demand.

Chapter Seven

Major Findings, Conclusions and Areas for Future Research

7.1 Introduction

This research explores the concept of Organisational Agility in the National Health Service (NHS) and, as a result, is one of a limited number of studies, which have examined the importance, relevance, and application of concepts that had primarily emerged from a manufacturing business organisation context, within a healthcare organisation setting. Such a healthcare organisation context is represented in this research by NHS Hospital Trusts. Earlier studies include Waddington (1995), one of the first known investigations examining the adoption and application of Total Quality Management (TQM) in the NHS. Similarly, Homa (1998) conducted the first known study investigating the application of Business Process Re-engineering / Redesign (BPR) in the NHS, through adopting a case study approach that is similar to the one adopted here, by involving NHS Hospital Trusts as case study organisations.

In this vein, this chapter seeks to highlight and develop the major findings emerging from the analysis of the research primary data collected from the NHS Trusts involved in this study, which was presented and discussed in Chapters Five and Six. This is done with the aim of integrating the main themes, which emanate from these findings, in the light of the main research objectives, in order to focus the issues addressing organisational agility on healthcare.

It was earlier explained in Chapter One that the main objectives of the research were essentially formulated around the three main themes, which were identified by the researcher as characterising the literature on organisational agility. These themes informing the main research objectives primarily centre on examining: a) the perception and understanding of the concept of organisational agility, b) the need for organisational agility as essentially being driven by the nature of changes in the environment affecting the organisation, and c) the main factors / capabilities that underpin an organisation's ability to attain agility. Therefore, based on the aforementioned themes characterising the nature of the literature discussing agility, as

well as the choice of healthcare as the context of study, it was decided to formulate the major aims of the research so as to reflect such themes and context. These objectives are concerned with exploring and identifying:

1. The understanding and perception of the concept of organisational agility in the NHS Trusts.
2. The perceived need for organisational agility in the NHS Trusts, as essentially being driven by the nature of the environment affecting such Trusts.
3. The capabilities that underpin organisational agility in the NHS Trusts.

The NHS Trusts designated as case study organisations for the purposes of this research, in an effort designed to fulfil its main objectives, include: **Trust A**, which is a *one star, lower performing Trust*, and **Trust B**, which is a *three star, higher performing Trust*, according to the NHS Performance Ratings published by the Commission for Health Improvement (CHI) (2003). The choice of these two differently performing Trusts provides an interesting opportunity for exploring whether there is a corresponding difference between these Trusts, in terms of the main concepts and variables concerning organisational agility being addressed in this research, and are covered by its main objectives. This is considered a contribution on the part of the study towards providing new knowledge concerning the usefulness of the NHS Performance Ratings of Hospital Trusts, in providing an indication as to the overall ability of these Trusts to effectively respond to and deal with the various pressures, demands, and requirements placed on them by various environmental parties.

Based on this, the major contribution arising from the research is the consideration that it is the first known study investigating the concept of organisational agility in the NHS. In this context, the study builds on the crucial efforts made by a number of pioneering writers in promulgating the concept of agility, such as: Goldman and Preiss (1991), Nagel and Bhargava (1994), Goldman et al. (1995), Gunneson (1997), Goldman and Graham (1999), Huang (1999), Yusuf et al. (1999) and Zhang and Sharifi (2000). In addition, the study has sought to broaden the span of coverage of this rapidly growing body of knowledge chiefly addressing the all-encompassing

effects of today's dynamic environmental reality on organisations, regardless of which sectors they operate in, through investigating organisational agility in healthcare organisations.

7.2 Major Research Findings

After explaining the bases that have triggered this research, this section discusses the major findings that have emerged from the analysis of the primary data, collected from the case NHS Trusts, in the light of the main research objectives.

7.2.1 The Conceptualisation of Agility in Manufacturing and Healthcare Organisations

It was pointed out in Chapter Three that the literature addressing agility is predominantly focused on manufacturing organisations; hence the term “agile manufacturing”, which was first coined to refer to this emerging new field concerned with enhancing the ability of manufacturing organisations to adapt and respond rapidly to a fast changing and often unpredictable market environment. Such an overwhelming emphasis on investigating the concept of agility in manufacturing contexts has quite often been at the expense of examining agility in service-based organisations. Little studies addressing agility have been conducted on service organisations, particularly in healthcare, with virtually no previous study examining organisational agility in the National Health Service. Based on this, a growing need was identified for conducting research with the aim of examining and exploring agility in contexts other than manufacturing, especially in services and particularly healthcare services sector.

Therefore, this study adopts a new approach and direction for research on agility, complementing the traditional emphases on manufacturing business organisations, through specifically providing new knowledge concerning the reality of organisational agility in a healthcare context. Accordingly, the first objective of this research explored whether those conceptualisations of agility that have emerged from manufacturing backgrounds do in fact apply to healthcare, or whether such terminology used to describe agility should be modified so as to facilitate the introduction and subsequent adoption of agility in healthcare organisations.

A number of major findings have emerged concerning definitions of agility, which appear to be the most suitable to the context of enabling Hospital Trusts, as organisations concerned with the management and delivery of healthcare services, to respond to change, as well as those definitions seen to be the least suitable. These findings are as follows:

First: Two definitions of organisational agility emerged as being the most suitable (see section 5.3.1):

1. **“The ability to thrive in an environment of continuous and unpredictable change”.**
2. **“The ability to co-ordinate and integrate selectively physical resources, people and processes, knowledge and skills- regardless of their location: whether within an organisation or in other organisations: suppliers, partners, or even customers themselves- required to create, produce, deliver and support a constantly changing mix of goods and services for changeable markets”.**

These findings suggest that in addition to the fact that both Trusts perceive organisational agility as the ability to thrive in an environment of continuous and unpredictable change, they believe that the means to achieve this is through co-ordinating and integrating various resources, skills, and capabilities, whether those are internal or external to the organisation, in order to support the delivery of healthcare services to users (patients) and purchasers (Primary Care Trusts) with constantly changing demands and requirements. Analysis of the reasons for perceiving agility as **“The ability to thrive in an environment of continuous and unpredictable change”** revealed that the relevance of as well as the need for organisational agility, in NHS organisations, is due to the main characteristic of the environmental conditions affecting these organisations. Such a characteristic is one of dynamism, in that the requirements and expectations placed on NHS Hospital Trusts in general by a number of key stakeholders, are constantly and rapidly changing. As a result, being able to not only survive, but also thrive in the light of ever-changing environmental requirements, becomes of paramount importance, in order to continually maintain the ability to provide quality and responsive healthcare services. The importance of maintaining the ability to thrive in the midst of continual change, on the part of healthcare organisations operating within the NHS, was illustrated by the following interviewee:

- **“In terms of the National Health Service, at this precise moment in this organisation, definition b is probably the most relevant: the ability to thrive in an environment of continuous and unpredictable change.**

The problem here in the NHS is not one so much of a changing market,but more importantly, it is about ability to thrive in an environment of continuous and unpredictable change; this is a particular point in the health service: we are moving fast through:

- 1. Application of new standards and measurements**
- 2. New ways of working**
- 3. New approaches to healthcare.**

...as far as the NHS is concerned, definition b is the key. I would put in the word “and often unpredictable change” there because it is continuous change that is key.”

(Medical Director, NHS Trust A)

This finding provides empirical evidence supporting the conclusion reached in section 3.3, in the vein of arriving at a generic conceptualisation of agility. Such a conclusion highlights that a common theme, which permeates the various definitions describing agility, is the particular emphasis on the necessity for organisations to effectively adapt and respond to the continuous and unpredictable changes inherent in today’s environment, in a manner that can enable them to thrive and, thus, sustain their competitiveness. This theme is reflected in a number of definitions and descriptions of agility (i.e. Goldman and Nagel, 1993; Nagel and Bhargava, 1994; Gehani, 1995; Goldman et al., 1995; Kidd, 1996; Cho et al., 1996; Wright et al., 1999; Yusuf et al., 1999; van Aseen, 2000; Zhang and Sharifi, 2000; Gunasekaran et al., 2002). For example, van Aseen (2000) states that: *“The key objective of agility is to allow an organisation to thrive in an environment of constant and unpredictable change...”* (van Aseen, 2000, p. 143). Wright et al. (1999) describe organisational agility as a prerequisite to surviving and prospering in the rapidly changing business environment of today and the future. Gunasekaran et al. (2002) express their support for such a conceptualisation of agility, by stating that: *“Agile manufacturing is a new expression that is used to represent the ability of a producer of goods and services to survive and thrive in the face of continuous change”* (Gunasekaran et al., 2002, p. 405).

Kassim and Zain (2004) conclude that the concept of agility comprises two main factors. These are proper response to changes, and exploiting and taking advantage of the changes. Zhang and Sharifi (2000) particularly highlight these two themes, through their suggestion that agility comprises two main factors: the first is

responding to changes (anticipated or unexpected), whereas the second is exploiting changes and taking advantages of these changes as opportunities. In conclusion, the definitions provided by Nagel and Bhargava (1994) and Goldman et al. (1995) capture the essence of these themes, through emphasising that it is the ability to thrive and prosper in an environment of continuous and unpredictable change, which reflects the true meaning of agility.

With regard to the definition that emerged as the second most suitable definition of agility: **“The ability to co-ordinate and integrate selectively physical resources, people and processes, knowledge and skills- regardless of their location: whether within an organisation or in other organisations: suppliers, partners, or even customers themselves- required to create, produce, deliver and support a constantly changing mix of goods and services for changeable markets”**, analysis of the reasons for such a choice indicated that both Trusts believe that the proactive approach of co-ordinating and integrating resources and capabilities is required to thrive in an environment of continuous and unpredictable change. This view of agility supports the important role of management in being able to dynamically co-ordinate and integrate various types of resources and capabilities, as well as knowledge and skills, in the vein of maintaining a flexible and responsive delivery of services in the light of dynamically-changing requirements and demands, thus facilitating organisational agility.

In particular, this finding provides important support for the recent views in the strategy literature informing the bases, upon which organisations may build and sustain their ability to effectively respond and adapt to changes in an agile manner and, thus, thrive, in dynamic environments. Such views are represented by the *resource-based view of strategy*, and the *dynamic capabilities approach*, which were discussed in detail in Chapter Two under sections 2.6, 2.7, and 2.8. The “resource-based” view of strategy argues in support of the inclusion of organisational capabilities and core competencies as an important part of strategy development and planning. It emphasises the importance of building and accumulating valuable physical and intangible resources, particularly knowledge and skills, and configuring them into core competencies to achieve competitive advantage (Becker, 1964; Williamson, 1975; Nelson and Winter, 1982; Teece, 1982; Wernerfelt, 1984; Hitt and Ireland, 1986; Tomer, 1987; Prahalad and Hamel, 1990; Barney, 1991, 1995, 1996,

2001; Grant, 1991, 1996a, 1996b; Hamel and Prahalad, 1993, 1994; Peteraf, 1993; Leonard-Barton et al., 1994; Collis and Montgomery, 1995; Wernerfelt, 2000; Gilgeous and Parveen, 2001).

On the other hand, the “dynamic capabilities” approach supplements the resource-based model by arguing that organisations should consistently develop, adapt, and renew their competencies in order to be able to respond effectively to the changes in the dynamic environment, and consequently achieve competitive advantage. These dynamic capabilities are considered as organisational processes or routines embedded in organisations, by which organisations synthesise, integrate and acquire various resources and knowledge assets, and generate new applications from those resources. As such, they are responsible for maintaining a dynamic congruence between an organisation’s resources, knowledge and skill bases, which form its capabilities and core competencies, and the changing requirements, demands, and conditions of its environment (Iansiti and Clark, 1994; Teece and Pisano, 1994; Grant, 1996a; Lei and Hitt, 1996; Teece et al., 1997; Hitt et al., 1998; Petroni, 1998; Eisenhardt and Martin, 2000). Such a perception of agility also highlights the vital roles of organisational processes, illustrated through co-ordinating and integrating various resources, skills and knowledge bases, in building and regenerating organisational capabilities and core competencies that maintain congruence with changing requirements (Garvin, 1994, 1998; Henderson, 1994; Iansiti and Clark, 1994; Grant, 1996a; Petroni, 1998; Becker and Zirpoli, 2003).

In addition, this finding concerning the choice of the aforementioned definition by the NHS Trusts as reflecting their perception of agility supports the importance of resource stretch and leverage promulgated by Prahalad and Hamel (1990) and Hamel and Prahalad (1993, 1994), and discussed in section 2.6. According to the principle of resource stretch and leverage, Johnson and Scholes (1999) explain that existing organisational resources and capabilities are further developed and enhanced, through providing means of stretching the organisation beyond its current base of resources. One of these means involves sharing resources with partner organisations in a consortium-like alliance, whereby different organisations complement their capability and resource needs as well as share these with others. This is done with the aim of

supporting the attainment of ambitious long-term objectives, which are thought to be difficult for an organisation to achieve under its current existing resources.

The themes emanating from the previous findings, which emphasise the importance of building, leveraging, and co-ordinating organisational resources and capabilities, also provide support for one of the four key principles underlying the concept of agility promulgated by Goldman and Nagel (1993), Goldman (1994), Nagel and Bhargava (1994), Goldman et al. (1995), Goldman (1998b), and Goldman and Graham (1999), which were discussed in section 3.4. This principle is concerned with *co-operating in order to enhance competitiveness* and incorporates the concept of the “Virtual Organisation”. According to this key dimension of agility, the agility of an organisation is substantially enhanced if it is capable of leveraging knowledge and co-operation, both internally and with other organisations. This would enable it to selectively co-ordinate and integrate, quickly and efficiently, people and processes, as well as knowledge and skills, regardless of their location, in the vein of supporting the delivery of a constantly changing mix of goods and/or services. Goldman (1998b) highlights the importance of forming effective enterprise partnerships, by which dispersed resources can be co-ordinated, since no organisation, however large, will have within it all the skills, capabilities, or the resources that it needs to take advantage of each opportunity. In this way, the “Virtual Organisation” is advocated as a means of responding to market opportunities with minimum dedicated resources and diversified risk. Hence, Yusuf et al. (1999) indicate that such an exercise of bringing together the core competencies of prospective partners into joint venturing, through the “virtual enterprise” model, is considered pivotal to achieving the higher level of agility; a state which they argue can be attained through facilitating “inter-enterprise” agility.

Based on this, the findings emerging from the choice of the two aforementioned definitions of agility as the most relevant ones to an NHS Hospital Trust context, highlight the importance of the dynamic co-ordination and integration of resources, capabilities, and knowledge bases, in order to facilitate an agile response to changing requirements and demands. Such findings, according to the NHS Trusts involved in this research, reflect the nature of the *modern healthcare economy*, within which NHS

Trusts are operating. The following interviewees provide further support to this conclusion:

- **“I believe integration and co-ordination are both vital in the modern healthcare economy, valuing partnership principles.”**
(Advisor / Community Healthcare Agency, NHS Trust B)

- **“Co-ordination of resources across boundaries is important to deliver seamless care for patients!”**
(Have not indicated job title, NHS Trust B)

- **“Because the concept is one of co-ordination not command therapy, it is co-ordinated therapy. We don’t make it happen just because we said it has to happen, we make it happen because we work, we co-ordinate, we bring skills and knowledge and resources to the problem to fix.**

It is this integration of various resources, physical, human, etc..., in order to achieve a common goal.”

(General Manager, NHS Trust A)

The mutual interdependency as well as partnership arrangements among a multiplicity of organisations operating in, and concerned with, the healthcare sector, illustrate the nature of such a modern healthcare economy. Examples of such close co-ordination and co-operation, as well as contractual arrangements and understandings among partner healthcare organisations, include those between healthcare provider organisations represented by NHS Hospital Trusts, as well as between these providers of healthcare on one hand, and purchasers of healthcare such as Primary Care Trusts (PCTs), on the other. Another example is reflected in the important and highly interdependent relationships that exist among suppliers of a professional workforce (i.e. doctors and nurses), such as medical and nursing colleges and the British Medical Association (BMA), for instance, as well as between those and healthcare provider organisations. In addition, the dependency on Governmental departments and agencies, on the part of NHS Hospital Trusts as well as General Practitioners, for their supplies of financial resources, on the one hand, and the strategic need on the part of central Government for effective, quality and responsive healthcare services delivered by primary and secondary healthcare provider organisations, on the other, provide a further illustration of the nature of today’s interdependent healthcare economy. As such, the importance of effectively co-ordinating and integrating broadly distributed

resources and capabilities held by a wide array of partner organisations becomes obvious in the light of such a modern healthcare economy.

This finding supports the relevance of the duality between the need to respond to change, and the importance of resource reconfiguration in facilitating such response in healthcare environments, as highlighted in section 2.10. It is also consistent with the emphasis placed by Chow et al. (1996) upon the importance of both: the allocation of resources to their most effective use, and the quick redeployment of resources, in enabling healthcare organisations to respond effectively to environmental pressures. Moreover, such a finding provides empirical support for the contention expressed by Miller and Ahmad (2000), in that within the UK, collaboration and partnerships between agencies, professions, and across sectors have emerged as the most efficient way of delivering high quality public services, including health and social care, as well as the most efficient way of ensuring their effectiveness in being responsive to service user needs.

Second: Two definitions of organisational agility emerged as being the least suitable to the particular environment of healthcare service delivery (see section 5.3.1). These are:

1. **“An organisation-wide capability to respond rapidly to market changes and to cope flexibly with unexpected change in order to survive unprecedented threats from the business environment.”**
2. **“The successful exploitation of competitive bases (speed, flexibility, innovation proactivity, quality and profitability) through the integration of reconfigurable resources and best practices in a knowledge-rich environment to provide customer-driven products and services in a fast changing market environment.”**

The major theme that emerged from analysing the reasons for these choices indicate quite evidently that such definitions heavily emphasise the market and business related terms and environments, which people working in healthcare organisations feel to be irrelevant to healthcare and the type of environment in which they operate. Feelings towards this issue have proved to be quite decisive that at one point, one respondent has made it clear that:

- **“The NHS will and can not ever operate like a business due to its inherent complexity and multi-disciplinary functionality”**
(Manager, NHS Trust B)

Thus, instead of focusing too much on threats emanating from competition and the need to survive in a business market type environment, one interviewee indicated that the threats and pressures are **“More indirect from public sector bureaucracy where quality of service takes precedence over survival or maximisation of profit”** (Manager, NHS Trust B). In this way, an important conclusion emerging is that the terminology associated with competition, markets and customers, which emanate from business (service and/or manufacturing) contexts is not well-received by people working in healthcare organisations. They acknowledge that although they had to respond to change, such change did not emanate from a free market, but that such change was primarily related to changing objectives and targets being imposed by central Government, among other parties. This finding is perhaps best expressed by the following interviewee, when explaining the reason for rejecting both of the aforementioned definitions:

- **“The concept of markets is alien to NHS provision. The concept that we would work to is service rather than market concept. The problem that we have is that we are not a true market player, we are a government-managed monopoly. And it does not mean that we have not got to respond to changes, it is not a free market that we are responding to, we are responding to changing objectives and targets. We are probably becoming more centrally led rather than centrally targeted. It is not a comment on whether it is bad or good, it is purely what we are and what we do.There is the clinical element and the non-clinical element working together. And when I describe the non-clinical element I really describe the management capacity and ability to harness the clinical elements.”**

(General Manager, NHS Trust A)

Based on this, an important finding is that healthcare organisations are sensitive to the wording, as well as the business implications of new concepts being introduced in a healthcare context. For instance, despite attempts to introduce fairly novel concepts primarily originating from a business and/or manufacturing context, into healthcare, such as Business Process Re-engineering / Redesign (BPR) and Total Quality Management (TQM), such business-related philosophies were not as widely embraced as anticipated (Waddington, 1995). The most likely reason for such a lack of enthusiasm might well be explained by the ethos in organisations concerned with delivering healthcare, which seeks to deviate from considerations of profit, competition or customer/client relationships. Based on this important distinction between the special context of healthcare and that of business, a number of interviewees have highlighted the differences between healthcare and business, and

emphasised the sensitive context of healthcare organisations, which is reflected in their ethos of care and humane treatment away from considerations of profit or competition. Such ethos represents the fundamental philosophy behind establishing the NHS, which is still deeply engrained within the psyche of professionals working in healthcare to the extent that they react quite sensitively to new concepts being adopted for implementation, from the private sector or business. The following quotations illustrate this theme:

- **“I think utilising terms such as market changes, using such terms as competitive bases, do in some ways turn healthcare into a commodity, which is in many ways what it is, and in many ways how people look at it. But it takes away the caring aspect of what healthcare is supposed to be about. you miss out on the fact that you are dealing with people, and people’s reactions are not exactly the same as cars engines. People don’t work that way. That was my feeling with regards to market changes and competitive bases.. That is very business managerial and I think some of members of the public, some of our client base do feel that you have become too business like. Things need to be run efficiently, effectively and economically but there are other parameters that come.”**

(Clinical Director of A&E, NHS Trust B)

- **“This is all related to business organisations: market change, business environment, competition. None of these things are present in the NHS. They tried to be under the Tory Government, but now competition is now being undermined,... fast changing market environment.. it is not a market in that sense.”**

(Clinical Director of Children’s Services, NHS Trust A)

- **“I am looking at definition a here and you have got terms like market changes and competitive bases and so forth. If we were talking to a staff group, that is not terminology that healthcare providing staff are comfortable with and enjoy. Although they can conceptualise that it is a competitive marketplace to a degree, but they are not usually the prime drivers that bring people into healthcare. You have to remember that I am from a clinician background. If you are talking to someone who is coming down the fast track management route, I am sure they would be much more acceptable phrases. ...I know if I sat with a group of my clinicians and gave that as a definition, then I would have instant switch off with them.”**

(Clinical Director of Therapy and Rehabilitation, NHS Trust B)

These findings clearly reject those conceptualisations of agility reflected in the aforementioned definitions, which were adapted from Huang (1999) and Yusuf et al. (1999), who mainly discuss agility from a business / manufacturing organisation perspective. They also provide strong support for the views discussed in section 2.5, arguing in favour of the inappropriateness of applying ready business models, borrowed from competitive, free market contexts, in healthcare, without proper customisation of these so as to facilitate their introduction and adoption in healthcare organisations (Peters and Wacker, 1982; Buller and Timpson, 1986; Collins et al., 1994; Swinehart et al., 1995). In particular, Collins et al. (1994) explain that research concerned with management in the private sector has shown that it has to adapt to a range of variables, one of which is form of production or service. Thus, they suggest that the particular context or nature of healthcare management may well require some modification of the notions of competition and other business-related concepts when these are applied in a healthcare management context. In this way, Collins et al. (1994) indicate that interchange of experiences between the public and private sectors should take into account the essential differences between them. Such differences include:

- The political nature of policy-making in the public sector and its goal of equity.
- The requirements of co-ordinated and integrated action between organisations.
- The nature of political accountability.

Such a need for modifying market and competition related approaches to organisation and management, when seeking to introduce these within a healthcare organisation context, can be attributed to the following reasons indicated by the aforementioned group of writers and concluded from the findings emerging from the previous discussion:

- The ethos in organisations concerned with delivering healthcare seeks to deviate from considerations of profit, competition or customer / client relationships. This ethos reflects the fundamental philosophy behind establishing the NHS, which is primarily concerned with providing healthcare to anyone who might need it, free at the point of delivery. As such, healthcare professionals perceive their essential duties as being concerned with the provision of health and humane care, separated from considerations of business and profits.

- Change affecting NHS organisations does not emanate from a free, competitive market, but is primarily related to changing objectives and targets imposed by central Government. Thus, threats are not triggered by competition and the need to survive in a business market type environment, but are associated with the need to achieve prescribed targets set and monitored by public sector bureaucracy.
- The unique relationships between hospitals, physicians, and purchasing groups (i.e. Primary Care Trusts) make strategy formulation and implementation more complex than in the traditional business setting. Thus, Cerne (1993) indicates that provider networks under managed competition will require new strategic planning partnerships between hospitals and physicians, community leaders, and the business community.
- Despite the apparent inefficiency of the public sector in producing and delivering public goods and services, which was highlighted by the proponents of the “market-based” orthodoxy of healthcare management reform presented in section 2.4, nevertheless, governments in all countries have often been involved in funding healthcare due to reasons related to basic human and social rights, as well as equality and fairness.

Third: The research developed a definition of organisational agility and subsequently tested its suitability for use within the case NHS Trusts participating in this study. This definition describes organisational agility as:

“The ability of the organisation to thrive in an uncertain environment that is characterised by dynamic and unpredictable change, through a set of capabilities which enable it to respond and adapt to various sources of change in the environment”.

Results have supported the suitability of such a definition focused on healthcare organisations (71.4% of respondents from NHS Trust A and 70.4% from NHS Trust B indicated that such a definition was most suitable for use within their Trusts, when explaining what organisational agility means [see table 5.11]). The importance of this result becomes evident, particularly when embarking on introducing as well as communicating the basic idea or philosophy underlying this novel concept, to various service as well as healthcare organisations. In this way, the definition can serve as a platform for introducing organisational agility in other NHS Trusts. Also, such a

definition developed and empirically supported for its suitability to the context of healthcare provider organisations, can well serve as a basis for further testing and modification.

Based on the previous findings, it is concluded that the introduction and application of new concepts borrowed from manufacturing and/or business contexts such as agility, in organisations operating within other sectors particularly service and healthcare ones, requires reaching a relevant understanding and a definition of these concepts. Such an understanding should be suitable as well as sensitive to the special context and nature of these organisations. This is considered to be essential in seeking to gain the commitment of organisational members towards realising a particular desired organisational state. The rationale for such a need to customise concepts and organisational practices, prior to their introduction and application in a particular organisation, is to ensure that the right words, point of emphases as well as desired end results are effectively communicated to members of an organisation. This would have the benefit of making these ideas understandable and relevant to the tacit knowledge, experiences and, hence, cognitive bases of the employees, thus facilitating the motivation and galvanisation of their efforts and commitment towards successfully adopting such concepts.

In particular, the following conclusions were reached: -

- The culture of people working in NHS / healthcare organisations is such that it favours simple, understandable and jargon-free concepts and terminology, which are sensitive to the basic values and ethos of providing healthcare to anyone who may need it, away from the considerations of profit, competition or customer/client relationship.
- The environment affecting healthcare organisations operating within the NHS is ever changing and dynamic. Survival is simply not enough. Instead, the ability to thrive and challenge is what truly reflects agility.
- The importance of co-ordinating and integrating various types of resources, capabilities and skills, whether they are located within the organisation or outside it. Sharing resources among others in a networking manner is particularly emphasised, since this reflects the complexity of the NHS.

7.2.2 The Perceived Need for Organisational Agility in the NHS Trusts, as being Driven by the Nature of Environmental Change

The findings that emerged from exploring the perception of organisational agility on the part of the NHS Trusts clearly highlighted that continuously changing requirements, expectations and demands have come to characterise the environment affecting healthcare organisations operating within the NHS. These requirements and demands emanate from a number of stakeholders and environmental factors, which have vested interests in the operation and performance of such organisations. In particular, one of the main findings emanating from exploring the conceptualisation of agility in the NHS Trusts provides strong support for the contention that the need for agility in organisations is primarily driven by dynamic and unpredictable environmental conditions. Hence, survival is simply not enough. Instead, the ability to thrive and challenge is what reflects agility in such circumstances. Such a link between dynamic and rapidly changing environmental requirements and demands, and the subsequent need for agility, is reflected in the definitions and descriptions of many writers on agility (i.e. Goldman and Nagel, 1993; Nagel and Bhargava, 1994; Gehani, 1995; Goldman et al., 1995; Kidd, 1996; Cho et al., 1996; Wright et al., 1999; Yusuf et al., 1999; van Aseen, 2000; Zhang and Sharifi, 2000; Gunasekaran et al., 2002).

As a result, the second objective of this research was concerned with further exploring the link between such an environmental reality characterising the nature of the modern healthcare economy, within which NHS Hospital Trusts are operating, and their subsequent need for organisational agility. This was addressed through exploring, in depth:

1. The **importance, dynamism, unpredictability** as well as **uncertainty** of the main environmental factors suggested to be affecting the NHS Trusts and, thus, driving their need for organisational agility.
2. The perceived **current level of agility** at which each Trust is dealing with changes in each of the main environmental factors affecting it, as well as the perceived **required level of agility** for dealing with such factors, for each of the two NHS Trusts.

In order to achieve this objective, twenty environmental factors were identified to be affecting the management and delivery of healthcare services on the part of NHS Hospital Trusts, in general. These were then categorised under seven main groups. The identification of these factors was through two means: 1) Analysing responses to the in-depth interviews, in which respondents were asked to indicate the main environmental factors, which they considered to be the main sources of change affecting their management and delivery of healthcare services (see Appendix A: The Interview Questions Schedule / Protocol); 2) Reviewing the literature discussing the recent Governmental initiatives addressing the NHS. The seven environmental groups and the twenty factors, which they comprise, were presented in table 5.12. Subsequently, this table is reproduced here for presentation.

Potential Customers / Users and Purchasers of Secondary Healthcare
1. The Requirements and Expectations of Patients
2. The Demand made by Patients on service(s) provided by the Trust
3. The Requirements and Expectations of General Practitioners
4. The Demand made by General Practitioners on service(s) provided by the Trust
5. The Requirements and Expectations of Primary Care Trusts
6. The Requirements and Expectations of Health Authorities
Potential Competitors / Providers of Secondary Healthcare
1. The Emergence of new Competitors in the form of Private Sector Hospitals
2. The Emergence of new Competitors in the form of Overseas Healthcare Providers
3. The Emergence of new Competitors in the form of Other NHS Trusts/Hospitals
Governmental / Political and Legislative Factors
1. Governmental Policies, Plans and Initiatives
2. The Use and Application of Hospital League Tables
3. Legislation/Directives Pressures (e.g. European Working Time Directive)
Technology
1. Innovations in Medical Technology (e.g. New Drugs; New Methods of Diagnosis and Treatment)
Supply
1. Supplies of Workforce (professional staff including consultants, doctors, nurses)
2. Supply/Availability of Medical Equipment
3. Supply of Financial Resources/Public Funding
Social Services
1. The Impact of Social Services
Demographic Factors
1. Disease/Illness Profile (Emergence/Re-emergence of Diseases/Illnesses)
2. Population/Demographic Profile (Age, Immigration, Distribution of Population)
3. The Media Reporting and Coverage of the NHS

Note that the word “potential” was used in this context in the description of both: customers and competitors, since business and/or market related notions and terms were found not to be favourably accepted by healthcare organisations, according to the major findings emerging from analysis of the primary data collected to fulfil the first research objective (see sub-section 7.2.1).

These environmental factors were used as the basis for two measurement tools developed by this study (See Appendix B: The Self-Completion Questionnaire; Second Part). These tools are considered a development on the measurement tools designed by Zhang and Sharifi (2000), in which they measure the need for agility in manufacturing organisations. In this context, Zhang and Sharifi (2000) proposed a conceptual model for implementing agility in manufacturing organisations, which consists of three main components: **The first** is concerned with “agility drivers”, which are the changes in the business environment that necessitate from an organisation to search for new ways of running its business in order to maintain its competitive advantages. **The second** is concerned with “agility capabilities”, which are the essential capabilities that the organisation needs in order to positively respond to and take advantage of the changes. **The third** is concerned with “agility providers”, which are the means by which the “agility capabilities” could be obtained.

Based on this conceptual model, Zhang and Sharifi (2000) developed a methodology to help manufacturing organisations formulate strategic policies in their pursuit of agile manufacturing. Such a methodology consists of three major stages:

1. The determination of an organisation’s agility needs and its current agility level;
2. The determination of agility capabilities for the organisation to become agile;
3. The identification of business practices and tools, which could bring about the recognised capabilities for the organisation.

The first stage in this methodology involves determining an organisation’s “agility needs” and its “current agility level”, after identifying what Zhang and Sharifi (2000) refer to as the “*agility drivers*”. These are the sources of uncertainties, changes and pressures that emanate from the environment affecting the organisation, and are usually measured by assessing the amount of change and uncertainty characterising a number of environmental factors, such as customer requirements, technology, competition, and social factors. As environmental changes and pressures faced by organisations may vary, Zhang and Sharifi (2000) argue that the degrees of agility required by individual organisations will be different. This degree, they indicate, is defined as the “*agility need level*”. Once the agility need level is determined for an organisation, Zhang and Sharifi (2000) indicate that the next step is to assess the “*current level of agility*” of the organisation. The difference between the level of agility required and that, which the organisation already has, may then be analysed.

Based on the first stage in the methodology developed by Zhang and Sharifi (2000), which mainly aims to identify: the environmental “*agility drivers*”, the organisation’s “*agility need level*” or required level of agility, and its “*current level of agility*”, this study developed two main assessment tools:

1. The first tool was designed with the purpose of measuring three main dimensions, which assess the nature of the environmental pressures affecting the Trusts. These environmental pressures, which drive the need for agility on the part of the NHS Trusts, are similar in concept to the “*agility drivers*” referred to by Zhang and Sharifi (2000). Hence, this study’s tool is similar in its purpose to the self-assessment questionnaire developed by Zhang and Sharifi (2000), in order to determine the importance and urgency of becoming agile. Their questionnaire consists of a number of factors that are selected as measures to assess the degree of environmental turbulence impacting manufacturing organisations. The tool developed by this study also consists of a number of environmental factors to assess the degrees of importance and turbulence impacting the organisation. However, this study’s measurement tool was specifically designed so as to be relevant to a healthcare provider organisation context, operating within the NHS, through incorporating the environmental factors depicted in table 5.12. In this way, the study’s first measurement tool aims to assess:
 - The importance of the effect of a variety of environmental factors on the management and delivery of healthcare services provided by the NHS Trusts.
 - The amount of change taking place in these factors.
 - The extent to which the rate of change in each of these environmental factors is predictable.
2. The dimensions, which the second tool developed by this study was designed to measure, are similar in concept to an organisation’s “*agility need level*” and its “*current level of agility*”, referred to by Zhang and Sharifi (2000). These two dimensions include:
 - Identifying the *current level*, at which the NHS Trusts are responding to environmental change emanating from each of the aforementioned twenty environmental factors in a responsive and agile manner.
 - Identifying the level of agile response, which such Trusts perceive is *required* on their part, in order for them to be able to effectively adapt to and deal with the changing requirements, expectations and pressures posed on them by these environmental factors.

7.2.2.1 Major Common Findings Between the Two Trusts

Findings emerging from exploring the nature of the environment affecting the two Trusts, as well as their perceived need for organisational agility, strongly indicate that they both perceive that there is a clear need for a higher level of agile response on their parts, in dealing with the requirements placed on them by an *environment* that is characterised by: a *highly important* overall effect on the well-being of these Trusts in managing and delivering their healthcare services, as well as by reasonably *dynamic* and *uncertain* changes in its requirements and expectations. Specifically, these findings were summarised in table 5.43 and this is adapted here to provide an overview of these common findings between the two NHS Trusts.

Dimension	Common Findings between the Trusts
<p><i>Importance of the Effect of the Environment, on the management and delivery of healthcare services provided by the Trust</i></p>	<p>⇒ Both NHS Trusts consider the overall impact of the environment, in terms of its effect on their management and delivery of healthcare services, as being highly important.</p>
	<p>⇒ Both Trusts have considered the importance of the effect of all but one of the seven environmental groups representing the overall environment as being high.</p>
	<p>⇒ Respondents from both Trusts have also rated the importance of all but three of the twenty environmental factors making up such environmental groups as high.</p>
	<p>⇒ The “<i>Potential Competitors to NHS Trusts / other providers of secondary healthcare</i>” group, was the only one perceived by both Trusts to have little importance, in terms of the effect on their healthcare management and delivery.</p>
	<p>⇒ The importance of the effect of the following four environmental factors, on the Trusts’ management and delivery of their healthcare services, was perceived by both of them to be very high. These factors are:</p> <ul style="list-style-type: none"> • Governmental Policies, Plans and Initiatives • Supplies of Professional Workforce (consultants, doctors, nurses, for example) • Supply of Financial Resources/Public Funding • The Requirements and Expectations of Patients
<p><i>Amount of Change Taking Place in the Environment</i></p>	<p>⇒ Both Trusts perceive the overall amount of change / dynamism taking place in the environment affecting them as reasonably high.</p>
	<p>⇒ Both Trusts considered changes associated with six out of the seven environmental groups, representing the overall environment affecting them, to range from moderate to high.</p>
	<p>⇒ Three main groups particularly emerged as experiencing the highest amount of change, as perceived by both Trusts. These are:</p> <ul style="list-style-type: none"> • Governmental and Legislative Factors (Governmental policies and initiatives concerning the NHS, use and application of Hospital League Tables, legislation/directives pressures i.e. European working time directive) • Technology (Innovations in medical technology, i.e. new drugs, new methods of diagnosis and treatment), and • Potential Customers/Users and Purchasers of Secondary Healthcare (Requirements and expectations of patients, General Practitioners, Primary Care Trusts, Health Authorities)
	<p>⇒ “<i>Potential Competitors to NHS Trusts / other providers of secondary healthcare</i>” was the only group considered by both Trusts to experience a low amount of change, in that no rapid emergence of such alternative providers of secondary healthcare was expected.</p>
	<p>⇒ Governmental plans, policies and initiatives concerning the NHS were considered by both Trusts to be the environmental factor experiencing the highest amount of change.</p>

Dimension	Common Findings between the Trusts
<p style="text-align: center;"><i>Degree of Unpredictability of change in the Environment</i></p>	⇒ Both Trusts consider the overall degree of unpredictability characterising changes in their environments as moderate .
	⇒ Both Trusts perceive the nature of changes taking place in four environmental groups to be the most unpredictable . These are: <ul style="list-style-type: none"> • Technology (Innovations in Medical Technology, i.e. new drugs, new methods of diagnosis and treatment), • Demographic Factors (e.g. disease / illness profile, population / demographic profile, the media reporting and coverage of the NHS), • Governmental, political and legislative factors, and • Potential Customers / Users and Purchasers of Secondary Healthcare.
	⇒ Emergence of private sector hospitals, overseas healthcare providers and other NHS Hospitals as competitors was perceived by both Trusts to be fairly predictable.
<p style="text-align: center;"><i>Degree of Uncertainty surrounding changes in the environment</i></p>	⇒ Both Trusts consider the degree of uncertainty surrounding changes in their environment as above moderate .
	⇒ Changes associated with three main environmental groups were considered by the Trusts to be the main sources of environmental uncertainty affecting them. These groups subject of these changes are: <ul style="list-style-type: none"> • Technology (Innovations in Medical Technology, i.e. new drugs, new methods of diagnosis and treatment), • Governmental, political and legislative factors, and • Potential Customers / Users and Purchasers of Secondary Healthcare.
	⇒ Changes associated with the two factors of: Governmental Policies, Plans and Initiatives concerning the NHS , and Innovations in Medical Technology , were considered by both Trusts as being characterised with the highest degrees of uncertainty .
	⇒ The following four factors were not considered by both Trusts to constitute a source of uncertainty . These are: <ul style="list-style-type: none"> • Population / Demographic Profile • The emergence of new Competitors (Private Sector Hospitals) • The emergence of new Competitors (Other NHS Trusts/ Hospitals) • The emergence of new Competitors (Overseas Healthcare Providers)
<p style="text-align: center;"><i>The Current Level of Agility in Responding to and Dealing with Changes in the Environment</i></p>	⇒ Both Trusts have rated the current level of agility , at which they are responding to and dealing with changes in the overall environment affecting them, as moderate .
<p style="text-align: center;"><i>The Required / Needed Level of Agility in order to Effectively Respond to Changes in the Environment</i></p>	⇒ The level of agility perceived by the Trusts to be required / needed on their part, in order to effectively respond to, and thus thrive in, the overall environment affecting them, was significantly high . ⇒ The Trusts have considered all but one of the seven environmental groups as requiring quite a high level of agility . ⇒ The only group perceived to require the least level of agility in responding to its changes is “ Potential Competitors / Providers of Secondary Healthcare ”. ⇒ Both Trusts perceive all but three , of the twenty environmental factors affecting them, as requiring quite a high level of agility on their part. The remaining three factors requiring the least level of agility are those related to other “ Providers of Secondary Healthcare ”.

It can be seen from the above table that two environmental groups emerged as having the most significant impact on both Trusts, in terms of the importance of the requirements that they pose, as well as the amount and uncertainty of change characterising these requirements. These groups include *Governmental, political and legislative factors*, and the *requirements of users and purchasers of secondary*

healthcare (patients, General practitioners, Primary Care Trusts, Health Authorities). These findings provide empirical evidence supporting the conclusions reached earlier in sub-section 7.2.1, which highlighted that although healthcare organisations operating within the NHS had to respond to change, this change did not emanate from a free, competitive market. Instead, such change was primarily related to changing objectives and targets being imposed by central Government initiatives, in addition to requirements and expectations of users (patients) as well as purchasers (Primary Care Trusts) of secondary healthcare services. The importance of changes in requirements and demands emanating from these two environmental stakeholders, to NHS Trusts, is due to a situation in which NHS Hospital Trusts depend on Governmental departments and Primary Care Trusts for their supplies of financial resources. Also, there is a strategic need on the part of central Government for effective, quality and responsive healthcare services delivered by secondary healthcare provider organisations represented by Hospital Trusts.

These findings add further empirical support for the discussion made in Chapter One, which made the argument that the need for organisational agility on the part of healthcare organisations operating within the NHS is primarily driven by Governmental objectives and targets for the NHS. For example, it was explained in Chapter One that the market reforms, which have been introduced by consecutive Conservative Governments, particularly the “internal market” reforms in the early 1990s, in addition to changes triggered by The New Labour Government through The Department of Health (1997) White Paper: “*The New NHS: Modern, Dependable*”, and The Department of Health (2000) White Paper: “*The NHS Plan: A Plan for investment. A Plan for reform*”, have created new environmental conditions that have widespread and all-encompassing changing effects on the way, in which healthcare organisations operate within the NHS. These various NHS reforms introduced by successive Governments have moved the NHS and its organisations from a relatively stable to a relatively dynamic environment. Perhaps the most radical of these environmental changes, as Savage (1993) and Salauroo and Burnes (1998) indicate, was the creation of an internal market within the NHS. Such an internal market resulted from the separation of purchasers of healthcare, such as Primary Care Trusts for example, and providers of healthcare, such as NHS Hospital Trusts. This, in turn, resulted in the creation of *divergence* rather than *convergence* in the NHS, which

often puts pressures upon organisations operating under such conditions to deal and cope effectively with the changing environmental requirements.

Also, the emphasis placed upon the need to maintain a flexible and responsive service to the users of the NHS, represented by patients, has played an important role in creating a source of continually changing and sometimes demanding requirements and expectations. Collins et al. (1994) indicated that one of the tenets of the “market-based orthodoxy” of healthcare reform instigated by consecutive Conservative Governments is the emphasis that users of public services should be viewed not so much as citizens but as consumers and customers, who have requirements and expectations, to which organisations providing public services such as NHS Trusts must be responsive and attentive. This clearly places increasing emphasis upon the need to be responsive and flexible in adapting to as well as dealing with the various requirements, expectations and demands placed on providers of healthcare. Also, the different Governmental reform initiatives of the NHS [The Department of Health White Paper (1989): “*Working for Patients*”; The Department of Health (1997) White Paper: “*The New NHS: Modern. Dependable*”; The Department of Health (2000) White Paper: “*The NHS Plan: A Plan for Investment. A Plan for Reform*”] have arguably sought to advocate the principle that the health service should be a responsive as well as an agile one, which is sensitive to the needs, requirements and expectations of patients. In the light of such an increasingly changing and demanding operating environment affecting NHS Trusts, the importance of maintaining viability and the ability to thrive, is particularly highlighted.

7.2.2.2 Major Significant Differences Between the Two Trusts

Table 5.44 summarised the significant differences between Trust A, which is a one star, lower performing Trust, and Trust B, which is a three star, higher performing Trust, according to the NHS Performance Ratings published by the Commission for Health Improvement (CHI) (2003). This table is adapted here to provide an overview of these differences between the Trusts. Such differences are in terms of each of the dimensions exploring the nature of the environment affecting the Trusts, as well as their perceived current and required levels of agility. As indicated in the introduction to this chapter, the choice of two differently performing Trusts provides an interesting

opportunity for exploring whether there is a corresponding difference between these Trusts, in terms of the main concepts and variables concerning organisational agility being addressed in this research, and are covered by its main objectives. This is considered a contribution on the part of the study towards providing new knowledge concerning the usefulness of the NHS Performance Ratings of Hospital Trusts, with regard to providing an indication as to the overall ability of these Trusts to effectively respond to and deal with the various pressures, demands, and requirements placed on them by various environmental parties.

Significant Differences Between the Trusts		
Dimension	Trust A (One Star, Lower Performing Trust)	Trust B (Three Star, Higher Performing Trust)
Importance of the Effect of the Environment on the management and delivery of healthcare services provided by the Trust	⇒ A significantly higher importance of the impact / effect of the overall environment, on its management and delivery of healthcare services)	No significant differences compared with Trust A
	⇒ A significantly higher importance of the impact / effect of “Potential Customers/Users and Purchasers of Secondary Healthcare”, on its management and delivery of healthcare services.	
	⇒ A significantly higher importance of the impact / effect of the demands and requirements of three <i>purchasers of secondary healthcare</i> , on its management and delivery of healthcare services: <ul style="list-style-type: none"> • The requirements and expectations of General Practitioners. • The demand made by General Practitioners. • The requirements and expectations of Health Authorities. 	
	⇒ A significantly higher importance of the impact / effect of: <ul style="list-style-type: none"> • Supply of Medical Equipment. • The Disease / Illness Profile. • The Population Profile, on its management and delivery of healthcare services. 	
Amount of Change Taking Place in the Environment	⇒ Significantly more changes in the requirements and demands placed by “Governmental, Political And Legislative Factors”.	No significant differences compared with Trust A
	⇒ Significantly more changes in the pressures and requirements placed by European Union Directives, i.e. working time directive.	
	⇒ Significantly more changes in the requirements and expectations of two “Purchasers of Secondary Healthcare”: <ul style="list-style-type: none"> • General practitioners. • Health Authorities. 	
Degree of Unpredictability of change in the Environment	⇒ Significantly less predictable changes in two environmental factors: <ul style="list-style-type: none"> • Use and Application of Hospital League Tables • Media Reporting and Coverage of the NHS 	⇒ Significantly less predictable changes in one environmental factor: <ul style="list-style-type: none"> • Supplies of professional workforce, i.e. consultants, doctors, nurses.

Dimension	Trust A (One Star, Lower Performing Trust)	Trust B (Three Star, Higher Performing Trust)
<i>Degree of Uncertainty surrounding changes in the environment</i>	⇒ Significantly more uncertainty surrounding changes in three environmental factors: <ul style="list-style-type: none"> • The Demand made by General Practitioners • The Use and Application of Hospital League Tables • Supply of Medical Equipment 	⇒ Significantly more uncertainty surrounding changes in one environmental factor: - Supplies of Professional Workforce , i.e. consultants, doctors, nurses.
<i>The Current Level of Agility in Responding to and Dealing with Changes in the Environment</i>	⇒ Exerts a significantly higher level of agility in dealing with changes in the “Population / Demographic Profile”.	⇒ Exerts a significantly higher level of agility in dealing with the “Impact of Social Services”.
<i>The Required / Needed Level of Agility in order to Effectively Respond to Changes in the Environment</i>	⇒ Requires a significantly higher level of agility in order to be able to effectively respond to changes in the overall environment affecting it.	
	⇒ Requires a significantly higher level of agility in order to be able to effectively respond to changes in both: <ul style="list-style-type: none"> • “Potential Customers/Users and Purchasers of Secondary Healthcare”. • “The Impact of Social Services”. 	
	⇒ Requires a significantly higher level of agility in order to be able to effectively respond to changes in the requirements and expectations of its “Purchasers of Secondary Healthcare”. These are: <ul style="list-style-type: none"> • Requirements and expectations of GPs. • Demand made by GPs. • Requirements and expectations of PCTs. • Requirements and expectations of HAs. 	⇒ Requires a significantly higher level of agility in order to be able to effectively respond to changes in two environmental factors: <ul style="list-style-type: none"> • Supply of Financial Resources. • Impact of Social Services.

The major findings emerging from this table highlight that Trust A, which is a one star, lower performing Trust, attaches a significantly higher importance to the impact of the overall environment on its management and delivery of healthcare services, as well as perceives that it requires a significantly higher level of agility in order to be able to respond to changes in the overall environment affecting it, compared with Trust B, which is a three star, higher performing Trust. In particular, the requirements and expectations of users and purchasers of secondary healthcare services (i.e. patients, General Practitioners, Health Authorities) emerged as having a significantly more important impact upon Trust A’s management and delivery of healthcare services, compared with Trust B. These requirements and expectations also emerged as the factor requiring a significantly higher level of agile response on the part of

Trust A, compared with Trust B. This suggests that the lower the rating that a Hospital Trust achieves, according to the Commission for Health Improvement (CHI) “NHS Performance Ratings”, the higher the level of agile response required on its part to effectively respond to and deal with the various pressures, demands, and requirements placed on it by different environmental parties.

7.2.3 Exploring and Identifying the Capabilities that Underpin Organisational Agility in the NHS Trusts

The findings reached earlier in sub-section 7.2.2 have highlighted the need for a higher level of agility, on the part of the NHS Trusts. This is considered to be crucial in enabling these Trusts to deal with environmental requirements, expectations and demands that are perceived to have a highly important overall effect upon their management and delivery of healthcare services. Such a high need for agility is also believed to be required to adapt and respond to reasonably dynamic and uncertain changes in these environmental pressures.

In view of such findings, the third research objective focuses on exploring and identifying those capabilities that can enable the Trusts to attain the required higher level of agility perceived by both of them to be necessary in responding sufficiently to such environmental changes. In this sense, the third objective builds on the reality of the environment affecting these Trusts, as well as their emerging need for agility, by seeking to identify those capabilities that can well underpin their efforts to attain such a higher level of agility. Therefore in the context of seeking to fulfil the third research objective, the third and final part of the self-completion questionnaire was designed, which includes seven main “agility-enabling” constructs developed conceptually by this research (see Appendix B: The Self-Completion Questionnaire; Third Part).

These are:

1. Dynamic Capabilities.
2. Leadership and Change Management.
3. Leeway in Organisational Structure.
4. Leeway in Organisational Culture.
5. Leeway in Technology.
6. Environmental Scanning.
7. Operational Flexibility.

Under section 6.2, subsections 6.2.1 through to 6.2.7 explained in detail how each of the seven main “agility-enabling” constructs was operationalised and measured. This included explaining how the items measuring each of these constructs were developed conceptually from the relevant extant literature. As the items measuring the constructs represent attitudes, behaviours and practices, which implicitly reflect a number of underlying dimensions related conceptually to the main construct, the operationalisation and measurement process employed Exploratory Factor Analysis (EFA). The purpose behind conducting EFA was to identify and extract the underlying conceptual dimension(s) or component(s), which emanate from each of the seven main aforementioned “agility-enabling” constructs, developed and designed by this research. Internal Consistency Reliability Test (Cronbach’s alpha) was then employed in order to assess the reliability of each resulting component / capability, using Cronbach’s alpha coefficient. Finally, after identifying the items making up each new component / capability, as well as ascertaining the internal consistency reliability score (Cronbach’s alpha coefficient) for it, a summated scale for all the items constituting each resulting factor was then created by combining / summing these items into one total, which was then used to represent a new variable, through calculating their average score.

Based on the aforementioned operationalisation and measurement process, including the results of the statistical techniques employed in such a process, fourteen main “agility-enabling” factors / capabilities have emerged from the seven main constructs that were initially-developed (i.e. *Dynamic Capabilities, Leadership and Change Management, Leeway in Organisational Structure, Leeway in Organisational Culture, Leeway in Technology, Environmental Scanning, Operational Flexibility*), in an effort designed to fulfil the third research objective. These fourteen factors are presented as follows:

(A) The “Dynamic Capabilities” construct resulted in the following two “agility-enabling” capabilities: -

First: “Dynamic Integration of Knowledge” (DINTKNWL) (alpha = 0.87)

Second: “Dynamic Co-ordination of Resources” (DCOORRES) (alpha = 0.80)

(B) The “Leadership and Change Management” construct resulted in one capability, which is: -

“Effective Leadership and Change Management” (EFLDCHGM) (alpha = 0.94)

(C) The “Leeway in Organisational Structure” construct resulted in the following three capabilities: -

First: “Horizontal Organic Structure” (HORGSTRU) (alpha = 0.84)

Second: “Decentralisation of Authority and Decision-Making” (DECENTRA) (alpha = 0.88)

Third: “Informal Style of Management” (INFORMAL) (alpha = 0.78)

(D) The “Leeway in Organisational Culture” construct resulted in the following three capabilities: -

First: “Commitment to Shared Vision and Values” (CTSHVNVL) (alpha = 0.88)

Second: “Learning and Innovative Organisational Culture” (LEARNORG) (alpha = 0.86)

Third: “Tolerance to Change” (TOLCHANG) (alpha = 0.62)

(E) The “Leeway in Technology” construct resulted in the following two capabilities: -

First: “Effective Provision of Information and Technology” (EFPROINF) (alpha = 0.89)

Second: “Open Attitude Towards Information and Knowledge” (ATINFOKN) (alpha = 0.60)

(F) The “Environmental Scanning” construct resulted in the following two capabilities: -

First: “Deep Environmental Scanning” (DEEPSCAN) (alpha = 0.91)

Second: “Wide Environmental Scanning” (WIDESCAN) (alpha = 0.83)

(G) The “Operational Flexibility” construct resulted in one capability, which is: -

“Operational Flexibility” (OPERFLEX) (alpha = 0.82)

In this way, one of the main contributions of this study is the conceptual development and empirical validation of the fourteen “agility-enabling” capabilities. This was as a result of the operationalisation and measurement process of the seven main “agility-enabling” constructs, which were conceptually developed and measured by this research, since no scales were found in the literature measuring such constructs, with the exception of two scales found in the extant literature and subsequently adopted by this research in measuring the “environmental scanning” construct (see sub-sections **6.2.1; 6.2.3; 6.2.4; 6.2.5; 6.2.6; 6.2.7**). This finding, reflecting the aforementioned contribution of the study, provided empirical support for the work of various authors,

who sought to establish a link between a number of organisational practices and attributes, and the facilitation of organisational agility. The contributions of these authors were discussed in Chapter Six, sub-sections **6.2.1 – 6.2.7**. In addition, this research is one of the first known studies to provide empirical support and testing of Grant's (1996a) theory of "*integration of knowledge as the foundation of organisational capability*". According to this theory, Grant (1996a) identifies three main characteristics of knowledge integration, which he argues enable organisations operating in dynamically changing environments to continuously regenerate their capabilities in response to changing requirements. These characteristics pertaining to the kind of knowledge integration facilitative of dynamic renewal of capabilities, include:

- d. The *efficiency of integration*, which represents the extent of the benefits, which a particular integration of knowledge forming a capability brings to the organisation.
- e. The *scope and span of integration*, which represents the breadth as well as the diversity of specialised knowledge, upon which organisational capabilities draw.
- f. The *flexibility of integration*, which represents the ability to access additional knowledge and reconfigure existing knowledge.

The empirical adaptation and testing of the aforementioned characteristics of knowledge integration under dynamic conditions was through formulating items, based on these characteristics, in order to measure the "Dynamic Capabilities" construct. Such items were then empirically validated, through being extracted by Exploratory Factor Analysis (EFA), as well as tested for their reliability, thus representing the new "**Dynamic Integration of Knowledge**" (DINTKNWL) capability.

Also, based on the major findings that have emerged from this research, it is concluded that this study has provided important support for the recent views in the strategy literature informing the bases, upon which organisations may well build and sustain their ability to effectively respond and adapt to changes in an agile manner and, thus, thrive, in dynamic environments. Such views are represented here by the *resource-based view of strategy*, and the *dynamic capabilities approach*, particularly discussed and highlighted in sections **2.6 – 2.9**. The two "agility-enabling"

capabilities of “Dynamic Integration of Knowledge” (**DINTKNW**) and “Dynamic Co-ordination of Resources” (**DCOORRES**) are the main outcomes of such strategy-related views, which have emerged as a result of the empirical stage of this research applied within a healthcare setting, represented by the case NHS Hospital Trusts.

Based on these fourteen “agility-enabling” capabilities, fulfilling the third research objective was sought by:

1. Identifying the extent of existence / practice of the aforementioned “agility-enabling” capabilities, on the part of the case NHS Trusts.
2. Identifying the perceived importance of these “agility-enabling” capabilities in enabling the Trusts to respond and adapt to changes in their environment, in an agile manner.
3. Testing the hypothesised relationship between the fourteen “agility-enabling” capabilities and agility.

7.2.3.1 Common Findings Between the Two Trusts, with regard to the extent of Existence / Practice of the “Agility-Enabling” Capabilities

Five “agility-enabling” capabilities emerged as the ones, which are practised the most in both Trusts. In other words, respondents from both Trusts have given a moderate to a relatively high degree of agreement that these five capabilities are existent and are practised. These have ranked among the seven most practised capabilities in both Trusts, although with varying rankings for the same capability in each Trust (see table 6.8). Such capabilities are:

6. “Dynamic Integration of Knowledge” (**DINTKNWL**),
7. “Effective Leadership and Change Management” (**EFLDCHGM**),
8. “Learning and Innovative Organisational Culture” (**LEARNORG**),
9. “Deep Environmental Scanning” (**DEEPSCAN**), and
10. “Decentralisation of Authority and Decision-Making” (**DECENTRA**).

Based on this finding, these five capabilities are considered as common strength areas in the two NHS Trusts, in terms of the existence and practise of “agility-enabling” capabilities (see table 6.9). It was indicated in Chapter Six that these findings are believed to be consistent with the reality characterising healthcare organisations / hospitals, in general, and the current situation in the two Trusts addressed in this research. For instance:

- With regard to “**Dynamic Integration of Knowledge**” and “**Learning and Innovative Organisational Culture**”, hospitals are quite often known for their skilled and professional workforce, which they recruit and rely upon in delivering healthcare services. Consultants, doctors, nurses, therapists, as well as healthcare service managers, are people, who possess specialised forms of knowledge, skills, and competencies that are considered absolutely essential for the hospital’s effective operation and provision of services. Without the effective and purposeful integration, harnessing, and management of the skills and capabilities that these professional hospital members possess, performance is most likely to suffer. This characteristic of hospitals also impinges upon the need to have continuous renewal and updating of such knowledge and capabilities, which is addressed by building and developing a culture in the hospital that promotes learning, education / knowledge gain, as well as training.

- “**Effective Leadership**” as well as “**Decentralisation and Delegation of Authority**” have recently been emphasised in managing NHS Trusts, especially in the light of the initiatives undertaken by the two Trusts subject of investigation in this research, which have been published in the management arrangements documentation (explained in sub-sections **4.7.3** and **4.7.3.1**), provided to the researcher. These discuss the efforts undertaken lately, which aim at creating a clinical management structure that assumes most of the managerial as well as organisational responsibilities normally attached to the executive management level represented by the Chief Executive and executive directors. In this way, the Trusts are increasingly being re-organised and re-structured around a number of main clinical divisions, each headed by a clinician, who is assisted by both professional managers as well as clinicians. This represents a new shift in the nature of the relationship between managers and clinicians in the NHS, which have quite often been characterised by conflict and separation by functional silos, towards instilling a new spirit of empowerment, shared responsibility and authority, as well as mutual co-operation.

- As discussed earlier in sub-section **6.2.6**, “**Deep Environmental Scanning**” refers to the comprehensiveness of the organisation in examining alternative explanations and solutions, when confronted with an important, environmental, non-routine problem or opportunity. The agreement indicating the practice of such a capability, concerned with orienting as well as galvanising the efforts of the Trust towards responding to particular external requirements and demands, can be explained by the heavy emphasis, which successive governments have placed upon the NHS. The importance of the requirements, expectations and pressures quite often imposed by central Governments have characterised successive conservative governments’ “market reforms”, as well as the recent and current New Labour Governments’ agenda towards the NHS. Such an agenda was illustrated by the publication of both: The NHS Plan, and the White Paper: “The New NHS: Modern; Dependable”.

As a result, key governmental target areas and priorities have come to form an essential part of the “work agenda” for most of the organisations operating within the NHS; the most prominent of which are NHS Trusts. This has necessitated on the part of such Trusts to detect the most significant environmental and performance targets, fully understand their requirements, and then act to fulfil them. Hence the need for *deep environmental scanning* or what is known as “comprehensiveness”, which is defined as “*the extent to which an organisation when confronted with an important non-routine problem or opportunity tends to extensively examine alternative explanations and solutions*” (Lindgren, 2000, p. 120).

Five “agility-enabling” capabilities have been considered in both Trusts to be the ones, which are practised the least, although with varying rankings for the capabilities in each Trust. In other words, respondents in both Trusts have given a relatively low degree of agreement that the five capabilities are existent and are practised (see table 6.8). Such capabilities are:

1. “Horizontal Organic Structure” (**HORGSTRU**)
2. “Operational Flexibility” (**OPERFLEX**)
3. “Dynamic Co-ordination of Resources” (**DCOORRES**)
4. “Effective Provision of Information and Technology” (**EFPROINF**)
5. “Wide Environmental Scanning” (**WIDESCAN**)

Based on this finding, these five capabilities are considered as common weakness areas in the two NHS Trusts, in terms of the existence and practise of “agility-enabling” capabilities (see table 6.10):

– **“Horizontal Organic Structure”, and “Dynamic Co-ordination of Resources”:**

Although the two Trusts subject of investigation in this research have embarked on steps to establish a more open and empowering working environment within each of them, through introducing the recent clinical management structure, the findings here indicate that there is still some way to go in that regard. For example, issues concerned with cutting down bureaucracy, encouraging strong co-operation and integration among different units, locations, and departments, through forming teams and sharing resources across traditional functional boundaries, are still fairly novel concepts that require some time to become widespread in healthcare organisations.

- Both Trusts acknowledged that “**Operational Flexibility**” was poorly practised in their organisations (see table 6.17). In other words, respondents from both Trusts did not agree that the service delivery systems in their hospitals were able to adjust, adapt and, thus, respond flexibly to fluctuations in the demands and requirements posed by a number of key stakeholders in their environments (e.g. demand and requirements of patients, Primary Care Trusts, Government / Department of Health). These findings concerned with the lack of “**Operational Flexibility**” in both Trusts are consistent with the problems often encountered by NHS hospital Trusts, particularly in periods that witness severe seasonal fluctuations in demand for particular healthcare services, such as the winter season and epidemic outbreaks of influenza and cold related cases, for example. Almost all of the reports highlighting such problems faced by NHS Trusts emphasise shortages in beds, equipment and nurses as major reasons for crises within the NHS. Limited capacity and resources coupled with increased demand is concluded to be the main characteristic of such problems.

– Among the other weakness areas indicated by respondents in both Trusts to exist in their organisations is the apparent lack of “**Effective Provision of Information and Technology**”. This problem has been mentioned repeatedly by interviewees from both Trusts, who have complained about the outdated IT support in their

respective Trust, as well as the overwhelming amount of information provided in the form of key Governmental performance targets and guidelines. There was an obvious need to overhaul the IT network in both Trusts, as well as modernise personal computers used by members of the organisation. This apparent lack of effective provision of information may well explain another weakness indicated by respondents from both Trusts, which is that related to the ability to scan the external environment in order to identify the major parties affecting the hospital's management and delivery of healthcare services.

In conclusion, these findings have provided new knowledge and better understanding, with regard to the extent to which agility, reflected by the aforementioned fourteen capabilities, is in fact existent and practised in the Trusts.

7.2.3.2 Significant Differences Emerging from Comparison Between the Two NHS Trusts

It was earlier indicated in sub-section 7.2.2 that the lower performing Trust among the two NHS Trusts involved in this research, which is Trust A, attaches a significantly higher importance to the overall effect of the environment affecting its management and delivery of healthcare services, as well as perceives that it requires a significantly higher level of agility in order to be able to respond to changes in the overall environment affecting it, compared with **Trust B**, which is a *three star, higher performing Trust*.

As far as the practise of the “agility-enabling” capabilities on the part of the Trusts is concerned, it has emerged from this study *that Trust B, which is a three star, higher performing Trust*, significantly differs from Trust A, which is a one star, lower performing Trust, in its practise of the following (see sub-section 6.3.1.1):

- Trust B exhibited a significantly higher level of *commitment to a shared set of vision and core values*, as well as a significantly higher level of practice with regard to three activities associated with gaining the commitment of organisational members to a shared vision and values. These practices involve the following:

- *Every effort is made to agree on and communicate a clear vision for the hospital to all levels;*
 - *The hospital's core values are clear, widely shared, and consistently adhered to;*
 - *Every effort is made to assure that everybody has access to all the information they need concerning the hospital's vision, core values, as well its current and desired performance targets.*
- Trust B significantly differed from Trust A, in that it reflected *an open attitude towards information and knowledge.*
- Trust B exhibited a significantly higher degree of agreement, with regard to the practice of the two items reflecting *visionary leadership*, which are:
 - *Top Management Team (TMT) are known for their effectiveness in developing a long-term vision for the organisation and communicating that vision to all levels in the organisation*
 - *TMT are known for their effectiveness in encouraging and gaining commitment to continuous change and achieving the hospital/Trust's vision.*
- Respondents from Trust B exhibited a significantly higher degree of agreement, with regard to the practice concerning the *continuous communication of decisions to all people working in the Trust.*
- Respondents from Trust B expressed a significantly higher degree of agreement, with regard to:
 - *The perception of change in their Trust as being invigorating and essential to its success, as well as*
 - *The Trust's investment in building and developing general skills related to communication, problem solving and decision-making.*
- Respondents from Trust B exhibited a significantly higher degree of agreement, with regard to the practice concerning the *collection of information from sources outside the Trust.*

The only area related to “agility-enabling” capabilities, which was significantly more evident in Trust A, was that concerned with the *continuous revision of major decisions by a group of knowledgeable managers and clinicians.*

Based on these key findings, it becomes evident that the “*three star, higher performing Trust*” (Trust B) is relatively more advanced in terms of its practise of agility-enabling dimensions, compared with the “*one star, lower performing Trust*” (Trust A). This is also supported by earlier findings, which have shown that Trust A perceived that a significantly higher level of agility is required on its part, in order to effectively respond to environmental changes. Based on this, it can be concluded that the rating of Hospital Trusts operating within the NHS, according to the NHS Performance Ratings published by the Commission for Health Improvement (CHI), may well provide an insight into the performance of these Trusts, from an organisational agility perspective. In other words, the ranking on such a league table may well give an indication as to the overall ability of a Hospital Trust in effectively responding to and dealing with the various pressures, demands, and requirements placed on it by different environmental parties. This conclusion emerging from such a finding is considered a contribution on the part of this study, towards providing new knowledge concerning the usefulness of the Hospital League Tables.

7.2.3.3 The Perceived Importance of the “Agility-Enabling” Capabilities in Enabling Agile Response to Environmental Change

Respondents from both Trusts clearly perceive that all of the identified capabilities are important in enabling their respective Trusts to respond and adapt to changes in their external environments in an agile manner. This strongly supports the importance and contribution of the fourteen identified “agility-enabling” capabilities in seeking to achieve agility. All of these capabilities were clearly found by both Trusts to be important, in enabling them to better respond to and deal with continuous and unpredictable changes in the requirements and demands placed on them by factors in their environments. In other words, the role of such capabilities in enabling organisational agility has been empirically supported by the Trusts, which provides clear evidence demonstrating the potentially beneficial practice of the various behavioural dimensions associated with these capabilities, in enabling other healthcare organisations to effectively respond to changes in their environments and, thus, thrive.

7.2.3.4 The Hypothesised Relationship Between the Fourteen “Agility-Enabling” Capabilities and Agility

Sub-sections 6.2.1 through to 6.2.7 explained in detail how the “agility-enabling” capabilities represented attitudes, behaviours and practices, which demonstrate how agility, conceptualised as *the ability to respond and adapt to continuous and often unpredictable change*, can be enabled or facilitated in an organisation. Based on such an explanation of the theorised relationships between these fourteen “agility-enabling” capabilities, and how they enable the Trusts to become more agile in their response to changes in the requirements and expectations of factors in their external environment, the following hypothesis is formulated:

The fourteen “agility-enabling” capabilities will significantly explain the variance in the agility of the Trusts, in sufficiently responding and adapting to continuous and often unpredictable changes in the requirements and demands of a variety of factors in the external environment affecting their management and delivery of healthcare services.

Multiple regression analysis, included as part of the Statistical Package for Social Sciences (SPSS) version 11.0, was conducted in order to test the hypothesis. Multiple regression identifies how much of the variance in the dependent or outcome variable will be explained when several independent variables are theorised to simultaneously influence it. Hence, a multiple regression analysis is conducted, by which the independent (predictor) variables are jointly regressed against the dependent (outcome) variable, in an effort designed to explain the variance in it (Hair et al., 1998; Field, 2000; Sekaran, 2000; Bryman and Cramer, 2001).

Given the outcomes of the multiple regression analysis conducted into the relationship between the fourteen “agility-enabling” capabilities (independent/predictor variables), and the current level of agility in responding to environmental changes (dependent/outcome variable), the following findings have emerged: -

- ◆ The fourteen “agility-enabling” capabilities represented in the multiple regression model, have significantly explained the agility of the Trusts in responding to environmental changes.

- ◆ The model has confirmed the significant contribution of the set of predictors (14 “agility-enabling” capabilities) in explaining the agility of the Trusts in responding to external environmental change, in that such capabilities have significantly explained 49.6% of the variance in the current level of agility in responding to environmental changes (almost half of the variation in agility) (R Square = 0.496; $F = 4.563$, $p < 0.05$) (see table 6.33). Thus, the hypothesis is substantiated. Based on this result, the practise of these capabilities significantly explains / accounts for nearly half of the ability of the Trusts to respond and adapt to changes in the requirements and demands placed on them, by a variety of factors in the external environment affecting the management and delivery of their healthcare services and, thus, thrive in such an environment.

- ◆ Only one predictor, which is Operational Flexibility OPERFLEX, emerged as a significant predictor of the current agility of the Trusts in better responding and adapting to changes in the external environment affecting them ($t = 2.730$, $p < 0.05$). In addition, Operational Flexibility OPERFLEX emerged as having the highest standardised beta value (0.392), indicating that this variable has the highest degree of importance in the model, compared with the other predictors (see table 6.35). This supports the result reached through the significance of the t -test, in that Operational Flexibility also emerged as the most significant predictor of agility.

- ◆ Due to a potential problem of multicollinearity, caused by the observation that most of the “agility-enabling” capabilities (13 out of 14) are significantly correlated with each other (see table 6.32), “*stepwise regression*” was conducted. This is because the stepwise modelling process will usually preclude an additional variable going into the model, which is significantly correlated with a variable already in the model (Hair et al., 1998; Field, 2000). Two models resulted from the stepwise regression: **Model One**, which refers to when “Operational Flexibility” is used, and **Model Two**, when “Operational Flexibility” and “Wide Environmental Scanning” are used. Model One (consisting of operational flexibility as the predictor of agility) gives an F -ratio of 46.463, which is significant ($p < 0.05$). Model Two (consisting of operational flexibility and wide

environmental scanning) gives an F -ratio of 28.464, which is also significant ($p < 0.05$) (see table 6.37).

These results can be interpreted as meaning that both models significantly improved the ability to explain the outcome variable (agility), because the F -ratio is significant for each model, with Model One (consisting of operational flexibility as the only predictor variable) resulting in a more improved explanation of the outcome (agility), compared with Model Two (consisting of operational flexibility and wide environmental scanning as the predictor variables).

- ◆ Therefore, the results of the stepwise regression have demonstrated that the two aforementioned models have significantly improved the ability to explain the agility of the Trusts in responding to change. However, the first model had a better ability to explain agility, through Operational Flexibility.
- ◆ Also, the values of the standardised beta coefficients presented in table 6.39 have shown that Operational Flexibility OPERFLEX representing Model One has the highest significant standardised beta value (standardised beta coefficient = 0.611, $t = 6.816$, $p < 0.05$). Operational Flexibility also emerged as the predictor with the highest significant standardised beta value in Model Two (standardised beta coefficient = 0.515, $t = 5.487$, $p < 0.05$), compared with Wide Environmental Scanning WIDESCAN (standardised beta coefficient = .247, $t = 2.633$, $p < 0.05$). This indicates that Operational Flexibility has the highest degree of importance in both models, in that it emerged as the most significant predictor of agility.
- ◆ In this way, it has become clear from the results of the multiple regression analysis as well as the stepwise regression analysis that Operational Flexibility has emerged as the critical factor in explaining the ability of the Trusts to respond and adapt to changes in the requirements and demands of their external environments, in an agile manner and, thus, thrive in the midst of such changes. This finding is consistent with the extant literature discussing operational / manufacturing flexibility. For example, Chang et al. (2003) have suggested the development of operational / manufacturing flexibility as a new strategic imperative to deal with a

more dynamic environment. Beach et al. (2000) indicate that the strategic flexibility of operations has become an increasingly important issue for organisations, particularly when taking into consideration the shift in the dynamics of today's environment impacting organisations, which suggests the need for increased operational flexibility if organisations are to be able to respond rapidly. Moreover, Vokurka and O'Leary-Kelly (2000) stress that operational / manufacturing flexibility is widely recognised as a critical component to achieving a competitive advantage in the marketplace.

- ◆ Given this finding, and taking into consideration that Operational flexibility was found to be one of the least practised “agility-enabling” capabilities on the part of both NHS Trusts (see sub-section **7.2.3.1**; table 6.8; table 6.10), it is recommended that more investment and attention is to be directed towards improving the ability of the service delivery system in the hospitals, which the Trusts comprise, to better adjust, adapt and, thus, respond flexibly to changes in the pressures and requirements posed by key stakeholders in the external environment (e.g. demand and requirements of patients, Health Authorities, Government/DoH, etc.). Such an improvement of operational flexibility, thus, is argued to be important in helping such hospital Trusts to become more agile in responding to these changes.

The improvement of operational flexibility entails paying particular attention to the following, in response to any changes in the demands and requirements posed on the hospitals' healthcare service delivery systems:

- Varying the type and mix of services that the Trust provides.
- Introducing new healthcare services, in response to changing requirements and expectations.
- Overcoming the chronic problems of limited capacity and resources, particularly in the light of an ever-increasing demand on healthcare services provided by NHS Hospital Trusts. Although this seems to be a straightforward recommendation to improve the operational flexibility of hospitals' delivery systems, the importance of injecting more resources (e.g. professional staff, equipment, beds, and financial resources) can not be over emphasised.

7.3 Limitations and Areas for Future Research

As this study has sought to fulfil its objectives through adopting a case study research design, targeting two NHS Hospital Trusts, the findings and conclusions reached can only be generalised on these two Trusts that were designated as case study organisations for the purposes of this research. This is due to the reason that the main generalisation that can be based on the findings reached from conducting one or more case studies is a theoretical one, that is generalising the findings to the extant body of literature, which the study objectives relate to. This is in contrast to a survey that chooses a representative sample from a population, where the findings reached can be statistically generalised through using inferential statistics techniques (see sub-section 4.4.2 discussing the differences between analytical versus statistical generalisations). Therefore, an approach that can be adopted in order to generate findings related to organisational agility, which can be generalised across NHS Trusts, is conducting a survey that targets the whole population of such Trusts. In this way, such a survey-based study can serve the purpose of generalising its findings with statistical confidence (statistical generalisation).

The numbers of respondents to the self-completion questionnaires, from both Trusts, were dissimilar (23 from Trust A and 60 from Trust B). Such disparity in the number of people targeted with quantitative primary data collection might suggest that the basis for comparison between the two Trusts is invalid. However, the proportion of respondents to the self-completion questionnaires to the overall number of those initially targeted, from Trust A, is almost similar to the same proportion in Trust B (see table 7.1). In addition, the proportion of those who have participated in the in-depth interviews to the overall number of those initially targeted, from Trust A, is very close to the same proportion in Trust B (see table 7.1).

Trust	Self-Completion Questionnaires			In-Depth Interviews		
	Number of Respondents	Overall Number Targeted	Proportion	Number of Participants	Overall Number Targeted	Proportion
Trust A	23	99	23.23%	17	49	34.7%
Trust B	60	241	24.9%	17	47	36.17%

Table 7.1: Proportion of Respondents to Self-Completion Questionnaires and Participants in In-Depth Interviews, for each Trust.

The total number of respondents to the self-completion questionnaires is broken down, according to the level in the organisational structure to which each respondent belongs, for each Trust (see table 7.2). This table shows that the representation of the same level, in both Trusts, is highly similar, which adds further validity to the comparison conducted between the two Trusts.

Executive Management Board	Trust A	Trust B
No. of Respondents	2	3
Overall No. Targeted	4	6
Proportion	50%	50%
Senior Level / Clinical Management Structure	Trust A	Trust B
No. of Respondents	6	5
Overall No. Targeted	28	24
Proportion	21.4%	20.84%
Managerial Support to Executive Directors	Trust A	Trust B
No. of Respondents	2	2
Overall No. Targeted	5	5
Proportion	40%	40%
Managerial Support to Divisional Directors	Trust A	Trust B
No. of Respondents		2
Overall No. Targeted		4
Proportion		50%
Managerial Support to the Rest of the Clinical Management Structure	Trust A	Trust B
No. of Respondents	13	48
Overall No. Targeted	62	202
Proportion	20.96%	23.76%

Table 7.2: Breakdown of Respondents to Questionnaire, according to Level in Organisational Structure.

In a similar way, the total number of participants in the in-depth interviews is broken down according to the level to which the participant belongs, for each Trust (see table 7.3). This table shows that the representation of the same level, in both Trusts, is highly similar.

Executive Management Board	Trust A	Trust B
No. of Participants	3	6
Overall No. Targeted	7	12
Proportion	43%	50%
Senior Level / Clinical Management Structure	Trust A	Trust B
No. of Participants	14	11
Overall No. Targeted	42	35
Proportion	33%	31.4%

Table 7.3: Breakdown of Participants in Interviews, according to Level in Organisational Structure.

Moreover, the proportion of Managers to Clinicians for respondents to the self-completion questionnaires from Trust A (**Managers: 63.2%; Clinicians: 36.8%**) is highly similar to the proportion of Managers to Clinicians for respondents from Trust B (**Managers: 67.9%; Clinicians: 32.1%**) (see table 5.4). This provides another plausible basis for supporting a comparison between the two Trusts, since a highly similar mix and spread of respondents exists from both Trusts. This is in addition to the fact that in order to ensure consistency in determining the overall management population in each of the two NHS Trusts to be targeted with primary data collection, the same procedures were followed (see sub-section 4.7.3). Having said that, the study would have benefited from larger number of respondents from both Trusts, since this would have allowed more views and perspectives to be incorporated within the analysis of the primary data, which might have had an impact upon the final results and findings. Efforts have in fact been undertaken on the part of the researcher to ensure a higher response rate as possible, as was explained in sub-section 4.7.2. However, due to the consideration that both Trusts were essentially public service organisations, it was felt and subsequently concluded that members of these Trusts were reluctant to share their views regarding aspects of the performance of their respective organisations; the reason perhaps being due to political considerations and fear of reprisals. That was despite the reassurances given by the researcher, in that all responses received will be dealt with for the sole purposes of this research, and that all those who wished to participate in this study were assured absolute confidentiality and anonymity in respect to the responses and information they were willing to give (see Appendix B: The Self-Completion Questionnaire). Those who chose to participate in the in-depth interviews were reassured of confidentiality and anonymity verbally, since there was face-to-face contact with them.

This research explored organisational agility in the NHS Trusts primarily from the perspective of managers and clinicians working in these Trusts. As a result, the study did not incorporate the views of users of the healthcare services provided by the Trusts, represented by patients, into investigating the perception and application of organisational agility in healthcare. This was mainly due to the focus of this research on gaining an insight into how those responsible for the strategic and tactical running of healthcare organisations viewed a number of basic issues addressing the introduction and application of a fairly novel concept into their organisations. In this

way, this research is limited in addressing the concept of agility in the NHS from a provider of service perspective, as opposed to a user / patient based one. Therefore, an area recommended by this research for further research is the investigation of organisational agility in the NHS, from the viewpoint of the patients.

This is considered important, when taking into consideration that one of the tenets of the “market-based orthodoxy” of healthcare reform instigated by consecutive Conservative Governments, as indicated by Collins et al. (1994), is the emphasis that users of public services should be viewed not so much as citizens but as consumers and customers, who have requirements and expectations, to which organisations providing public services such as NHS Trusts must be responsive and attentive. In addition, the different governmental reform initiatives of the NHS [The Department of Health (1989) White Paper: “*Working for Patients*”; The Department of Health (1997) White Paper: “*The New NHS: Modern. Dependable*”; The Department of Health (2000) White Paper: “*The NHS Plan: A Plan for Investment. A Plan for Reform*”] have arguably sought to advocate the principle that the health service should be a responsive as well as an agile one, which is sensitive to the needs, requirements and expectations of patients. One of the main findings emerging from this research, which was discussed in sub-section 7.2.3.4, is that both Trusts did not deliver on the one key area that emerged as having the most important contribution to facilitating agility, which is Operational Flexibility. Patient views concerning how aspects of the hospitals’ service delivery systems can be enhanced so as to be able to better adapt and respond to the requirements, expectations, and demands of the users of their healthcare services, is thought to provide a rich source of information for performance evaluation towards enhancing overall responsiveness, flexibility and, hence, agility.

In addition, as this research project has adopted a holistic approach towards exploring the introduction and feasibility of, the need for, as well as the capabilities underpinning, organisational agility in healthcare provider organisations, separate studies can be conducted to investigate one or more of the issues addressed by the objectives of this research in more depth.

The multiple regression model representing the fourteen “agility-enabling” capabilities discussed in sub-section 6.4.1.2 has significantly explained 49.6% of the variance in agility of response to external environmental change. Also, the two models that resulted from conducting the stepwise regression significantly explained 37.3% and 42.5% of the variance in agility, respectively (see section 6.4.2.1). However, the remaining variance in agility, which was not explained by either of these models, means that there are other additional variables that are important in explaining agility that have not been considered in this study. Therefore, it is proposed that further research be conducted to identify other factors that may explain more of the variance in agility.

The research tools developed and used in this *study* (*the self-completion questionnaire* and the *interview questions protocol / schedule*) with the aim of exploring and examining organisational agility in healthcare organisations can well be used by other NHS Hospital Trusts, or in fact by any organisation operating within healthcare, in order to investigate the issues addressed by this study, within their own contexts. This has the potential of enhancing as well as replicating and adding further support to the major findings reached here.

Another area suggested for further research emanates from the development of a definition of organisational agility by the research, which was subsequently tested regarding its acceptance on the part of the case Trusts. This definition describes organisational agility as being:

“The ability of the organisation to thrive in an uncertain environment that is characterised by dynamic and unpredictable change, through a set of capabilities which enable it to respond and adapt to various sources of change in the environment”.

Results have strongly supported the suitability of such a definition focused on healthcare organisations (see sub-section 7.2.1). The importance of this result becomes evident, particularly when embarking on introducing as well as communicating the basic idea or philosophy underlying this novel concept, to various service as well as healthcare organisations. In this way, the definition can serve as a platform for introducing organisational agility in other NHS Trusts. Also, such a definition developed and empirically supported for its suitability to the context of

healthcare provider organisations, can well serve as a basis for further testing and modification.

In addition, the major findings reported earlier have highlighted that the “*three star, higher performing Trust*” (Trust B) is relatively more advanced in terms of its practise of agility-enabling dimensions, compared with the “*one star, lower performing Trust*” (Trust A). This is also supported by earlier findings, which have shown that Trust A perceived that a significantly higher level of agility is required on its part, in order to effectively respond to environmental changes.

Based on this, it can be concluded that the rating or ranking of Hospital Trusts operating within the NHS, according to the Department of Health’s Hospital League Table, may well provide an insight into the performance of these Trusts, from an organisational agility perspective. In other words, the ranking on such a league table may well give an indication as to the overall ability of a Hospital Trust in effectively responding to and dealing with the various pressures, demands, and requirements placed on it by different environmental parties. This conclusion emerging from such a finding is considered a contribution on the part of this study, towards providing new knowledge concerning the usefulness of the Hospital League Tables. Based on this, a need for further research to be conducted in order to examine such proposed interlinkages between the ranking, which Hospital Trusts achieve on the Hospital League Tables, and their perceived agility, is strongly emphasised.

7.4 Reflections and Learning Experience

Embarking on doctoral research is not an experience one goes through frequently in one’s life. On the contrary, it is often considered a once in a life time experience, which continually challenges and puts to the test one’s endurance, ability to effectively and efficiently manage time and resources available for the research, as well as seeks to exploit one’s potential. Hopefully, an outcome of such an experience is a confident, academic but nevertheless practical person, who has become a better one through learning about many things; most important of which is oneself. That is in the sense of better understanding as well as appreciating one’s work style and capabilities if put to the challenge and stretched.

Perhaps one of the most important lessons learnt is the importance of making informed choices and decisions, in that alternative possible courses of action or choices are thoroughly investigated and evaluated, before committing to a particular path, method, or technique. This is due to the reason that any decision taken may well influence the course of events that follow and, thus, impinge on the final outcome. In this way, the choice that emerges as adding the most value to, as well as contributing the most towards, fulfilling the main objective of the research, is implemented. Having said that, the outcomes emerging from any study are necessarily shaped and influenced by the nature of the design of the study, as well as the particular steps as well as tools employed for primary data collection.

Another lesson learnt is related to the literature “swampland”. One can spend a vast amount of time collecting and reading extensively about every study or paper, which may appear to be interesting, useful, or bear the smallest linkages to the main topics covered by the research. This can often lead to a loss of focus on the main issues, which the research seeks to fulfil. Instead, an important outcome of the learning experience is that although research demands extensiveness, thoroughness, as well as comprehensiveness, focusing on the main issues addressed by the research and seeking to fulfil them is what delivers a thesis at the end.

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